

SHOCKING EXCLUSIVE! MOTOR TREND

FEBRUARY 2017 MOTORTREND.COM



TWO-LITER
LUXURY
BIG FLAGSHIPS,
SMALL ENGINES

PANAMERA 2.0
PORSCHE'S SPORT
SEDAN REBOOTED

WAGONS, HO!
FOUR ALTERNATIVES
TO THE SUV BLUES

BOLT VS TESLA

ELECTRIC SHOOT-OUT
HAS CHEVROLET ZAPPED ELON'S MODEL S?

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ENTERTAINMENT
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TEN



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Contents

EST. 1949 VOL. 69, NO. 2

COVER STORY



2017 Chevrolet Bolt EV VS. 2016 Tesla Model S 60

► TESTS & DRIVES

42 THE LEGEND RETURNS

2017 Lincoln Continental Lincoln's Continental proves worthy of its nameplate. *Christian Seabaugh*

48 BOUGIE BUICK 2017 Buick Envision

Big in the PRC, Buick envisions success for its new compact crossover in the USA. *Christian Seabaugh*

54 OVERLANDER'S DREAM

2017 Jeep Grand Cherokee Trailhawk 4x4 Jeep's versatile Grand Cherokee gets the off-road-ready Trailhawk treatment. *Christian Seabaugh*



62 WAGONS, HO! Audi A4 Allroad, Mercedes-Benz E400 4Matic, Volkswagen Golf Alltrack, and Volvo V90

A gleeful reception of four all-new wagons. *Scott Evans, Angus MacKenzie, Kelly Pleskot*

68 JEKYLL AND HYDE 2017 Porsche Panamera

The sports car for the luxury car driver. *Angus MacKenzie*

72 SIZE MATTERS Cadillac CT6 2.0T VS. Volvo S90 T6 AWD Inscription vs. Mercedes-Benz E300

Small engines, big technology: three new takes on the luxury sedan. *Christian Seabaugh*

84 WINTER IS HERE 2015 Toyota Hilux AT38

Arctic Trucks goes Viking in Iceland. *Christian Seabaugh*

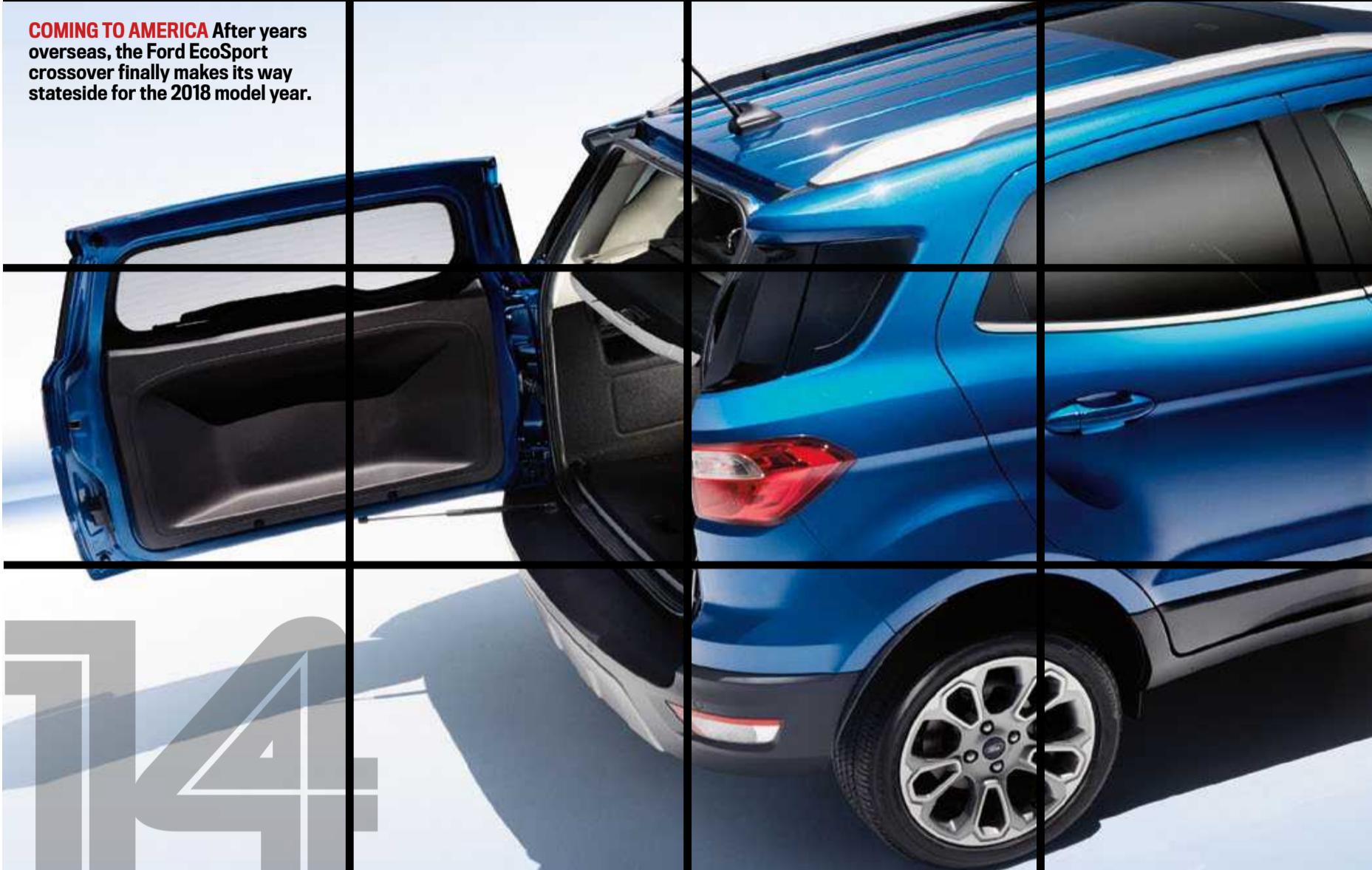


Contents

MOTOR TREND
ON DEMAND

MOTOR TREND OnDEMAND IS NOW LIVE! FOR MORE THAN 1,000 HOURS OF ORIGINAL AUTOMOTIVE programming, live motorsports, and an extensive historical archive, head to www.motortrendondemand.com.

COMING TO AMERICA After years overseas, the Ford EcoSport crossover finally makes its way stateside for the 2018 model year.



► DEPARTMENTS

8 LOHDOWN Edward Loh

14 TREND

14 INTAKE This month's hot metal.

20 WE SAY Words from our editors.

20 REFERENCE MARK Mark Rechtin

22 TECHNOLOGUE Frank Markus

24 THEY SAY INTERVIEW

Mats Fägerhag, CEO, CEVT

26 YOUR SAY Our readers talk back.



24

102 THE BIG PICTURE Angus MacKenzie



MOTOR TREND



GARAGE



ARRIVALS Honda Civic Touring **UPDATES** Chevrolet Camaro SS, Chevrolet Colorado Z71, Honda Pilot AWD Elite, Mazda CX-3 AWD (Grand Touring), Subaru Outback (2.5i Limited), Volkswagen Golf SportWagen TSI (S), Volvo XC90 T6 Inscription
VERDICT Nissan Maxima SR

94





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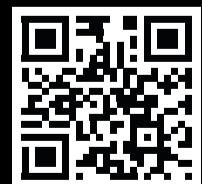
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The Lohdown



GALA OF THE YEAR!



Jam-packed with a who's who of the auto industry and random car-crazy personalities! Can you spot guys like Ryan Sheckler, Kenny Wayne Shepherd, and Magnus Walker? Because they were there.



TOTY Craig Schmatz, chief engineer for the Ford F-Series Super Duty; Todd Eckert, Ford Truck Group's marketing manager; and Mike Levine of Ford Product Communications picked up the hardware on behalf of Ford's Louisville, Kentucky, Truck Plant, where the Super Duty is built.

Justin Bell, friend of *Motor Trend* and the auto industry writ large, hosted our second annual gala and proved that it's possible to be both funny and classy.



The event-planning team, led by Karen Brown (second from right); Michelle Turczyn, Julia Smart, Shanna Machi, Maria Jamison, Allison Dadourian, KB, and Easton Geenen.

We announced our *Motor Trend* Awards winners

The 2017 Car, Truck, SUV, and Person of the Year were unveiled at a special gala November 14, 2016, at the iconic Theatre at Ace Hotel in downtown L.A. It was a golden evening for our winners from Chevrolet, Ford, Mercedes-Benz, and Tesla. We broadcast the show via Facebook Live, YouTube, and the *Motor Trend* Awards website. Head to those sites for the replay, or just check out a few shots from the evening.



10 MOTORTREND.COM / FEBRUARY 2017

What's On Demand This Month?

- JAN. 2 **Motorsport Mundial**
- JAN. 4 **HEAD 2 HEAD** Ep. 85
- JAN. 9 **Indian National Supercross Championship** (Bangalore)
- JAN. 9 **Motorsport Mundial**
- JAN. 12 **24H Endurance Series** (Dubai)
- JAN. 12 **ROADKILL GARAGE** Ep. 13
- JAN. 16 **Motorsport Mundial**
- JAN. 16 **Indian National Supercross Championship** (Pune)

- JAN. 17 **DIRT EVERY DAY** Ep. 60
- JAN. 21 **Asia-Pacific Rally Championship** (India)
- JAN. 23 **Asian Le Mans Series** (Thailand)
- JAN. 23 **Motorsport Mundial**
- JAN. 26 **House of Muscle**
- JAN. 30 **Motorsport Mundial**

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A SHOWDOWN FOR SKIN SUPREMACY

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CHEVY. THE MOST AWARDED CAR COMPANY TWO YEARS IN A ROW¹ JUST RAISED THE

The image features a central collage of various awards and accolades for Chevrolet vehicles, including:

- KBB.com 10 Best Tech-Savviest Cars Under \$20,000**
- J.D. Power Highest Initial Quality Large Heavy Duty Pickup**
- 2017 Green Car of the Year** (Green Car Journal)
- CAR AND DRIVER 10 Best 2017**
- A 2016 MOST POPULAR ON EDMUNDSDOTCOM Chevrolet Traverse Large Crossover SUV**
- 2016 IIHS TOP SAFETY PICK** (Chevrolet Malibu and Equinox)
- Highest Initial Quality City Car**
- KELLEY BLUE BOOK 2016 BEST RESALE VALUE AWARDS**
- A 2016 MOST POPULAR ON EDMUNDSDOTCOM Chevrolet Tahoe Large Traditional SUV**

Below the collage, two Chevrolet vehicles are displayed side-by-side: a silver **MALIBU** sedan on the left and a dark gray **EQUINOX** SUV on the right.

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¹Based on recognized industry awards for 2014/2015 year-end totals. ²EPA-estimated 238-mile EV range. Your actual range may vary based on several factors including temperature, terrain and driving technique. Limited availability late 2016 in select markets. U.S. News Best Cars: The 2016 Chevrolet Colorado, Impala and Traverse were named a Best Car for the Money, and the 2016 Impala and Malibu were named a Best Car for Families by U.S. News & World Report. View U.S. News Best Cars at usnews.com/cars. The Chevrolet Spark, Chevrolet Equinox (tie), and Chevrolet Silverado HD and LD received the lowest number of problems per 100 vehicles in their respective segments in the J.D. Power 2016 Initial Quality Study, based on 80,157 total responses, evaluating 245 models, and measures the opinions of new 2016 vehicle owners after 90 days of ownership, surveyed in February–May 2016. Your experiences may vary. Visit jdpower.com. Kelley Blue Book: Vehicle's projected resale value is specific to the 2016 model year. 2016 model-year vehicles' projected cost to own for the initial five-year ownership period is based on the average Kelley Blue Book 5-Year Cost to Own data, which considers depreciation and costs such as fuel and insurance. For more information, visit Kelley Blue Book's KBB.com. Kelley Blue Book is a registered trademark of Kelley Blue Book Co., Inc.

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CHEVROLET



TREND 02.17

INTAKE P14
THIS MONTH'S HOT METAL

WE SAY P20
WORDS FROM OUR EDITORS

FIRST LOOKS

Attack of the Cute Utes

THREE NEW MIGHTY-MITE SUVS ARE COMING SOON

Jeep Compass

> The company that invented the SUV is uniquely poised to cash in on the exploding popularity of small crossovers with its new Jeep Compass.

Replacing the old Compass and Patriot, the redesigned Compass rides on the subcompact Renegade's platform. To fit halfway between the Renegade and Cherokee, it's been stretched 8.0 inches with a wheelbase 2.4 inches longer.

It'll split the difference under the hood, too, where

the Compass' sole engine option will be the well-known 2.4-liter Tigershark good for 180 hp and 174 lb-ft. Front-drivers get a six-speed automatic or six-speed manual. All-wheel-drive models get the six-speed manual or that ZF nine-speed auto that has attracted unkind headlines in other Jeeps.

There are two all-wheel-drive options, one with a 20:1 crawl ratio and one without. You'll get the crawl ratio on the Trailhawk model, which will be available with the usual visual upgrades plus a 1.0-inch



lift, knobbier tires, an extra off-road mode, and tow hooks.

Inside, the Compass will be glitzed up to stand out with optional features such as 5.0-, 7.0-, or 8.4-inch touchscreen infotainment systems with CarPlay and Android Auto;

Beats audio; a 4.4- or 7.0-inch instrument panel screen; and a two-panel sunroof. A power liftgate, adaptive cruise control, and a power parking break are among other options. **Scott Evans**



Ford EcoSport

Ford is looking to get in on the subcompact crossover action by bringing its Fiesta-based EcoSport stateside.

The 2018 Ford EcoSport looks mostly the same as it did when the second-gen model arrived for the 2012 model year in overseas markets. The front end adopts the new corporate hexagonal grille

along with new headlights and foglights. The interior has also been brought up to date with a freestanding infotainment screen and a simplified dash design.

The EcoSport will be offered in four trim levels: S, SE, SES, and Titanium. Buyers will have a choice between two powertrains: the 1.0-liter turbocharged

EcoBoost I-3 or a 2.0-liter naturally aspirated I-4. Ford doesn't reveal specs for those engines, but the 1.0-liter EcoBoost makes 123 hp and 148 lb-ft of torque in the Fiesta and Focus, and Ford's 2.0-liter makes 160 hp and 146 lb-ft in the Focus. Both engines are backed by a six-speed automatic. Models equipped with the 2.0-liter come standard with all-wheel drive. SES models feature all-wheel drive, a sport-tuned suspension, and unique styling cues such as copper interior accents.

The EcoSport will also offer Sync 3 infotainment and Apple CarPlay and Android Auto. With FordPass, drivers can locate, start, lock, and unlock their vehicle from their phone. **Alex Nishimoto**





Nobody knew how quickly fully electric vehicles would arrive. I still don't think we know."

02.17 TREND

THEY SAY P24 INTERVIEW
MATS FÄGERHAG CEO, CEVT

YOUR SAY P26
READERS TALK BACK



The company that invented the SUV is poised to cash in with its new Jeep Compass.

Toyota C-HR

Born from the C-HR Concept, the production Toyota C-HR (which stands for Coupe High-Rider) brings some visual spice to Toyota.

Remember when the RAV4 was tiny? It isn't anymore, so the subcompact C-HR will slot below it. Ten inches shorter in length and 11 inches shorter in height, the C-HR is trying hard to look small and sporty, almost more like a tall hatchback (think Nissan Juke) than a proper SUV. Having its wheels pushed out to the corners for a 1-inch shorter wheelbase

than the RAV will probably buy a fair amount of interior space. So although it may be small, it shouldn't be a penalty box.

Being smaller than the RAV should make it lighter, too, which will make its 144-hp 2.0-liter four-cylinder and its 139 lb-ft of torque feel a bit more peppy. A CVT is the sole transmission option, and it's front-drive only—no AWD is offered at launch. It does get a Sport mode, which simulates a seven-speed auto, so there's that. Toyota says the C-HR was developed on the Nürburgring (seems everything is these

days), so it ought to go around a corner pretty well for a subcompact crossover.

A 7.0-inch touchscreen infotainment system is standard, as are dual-zone climate control, a backup camera, an electric parking brake, adaptive cruise control, automatic emergency braking, and lane departure assist. Options include heated power seats, blind-spot warnings, heated side mirrors, and keyless entry and ignition. **Scott Evans**



IN PLAIN SIGHT The rear door handles aren't well hidden in the C-pillar.



Intake Lynk & Co 01



Geely has taken the wraps off an all-new brand it's taking global.

The unusually named Lynk & Co will combine Chinese financial and manufacturing muscle with an international team of designers and engineers based in Sweden to produce a range of lavishly equipped vehicles aimed to compete with mainstream products from GM, Ford, Toyota, Honda, and Hyundai in the U.S., Europe, and China.

The first Lynk & Co vehicle, an SUV called the 01, will make its debut in China in the fourth quarter of 2017 and launch in the U.S. and Europe in 2018. By 2021 the Lynk & Co range will total four vehicles, including a three-box four-door sedan, a five-door hatchback, and a crossover. There are whispers that a fifth model, a high-performance, all-wheel-drive Subaru WRX fighter, is also in the plan.

The vehicles will be built on the modular CMA hardware

developed by CEVT, the Gothenburg-based company formed by Geely to create platforms and technologies for its automotive brands. The CMA architecture will also underpin the new Volvo XC40, due to appear next year, and the next-gen S40 and V40.

Engines will include the transverse-mounted 1.5-liter three-cylinder and 2.0-liter four-cylinder units developed by Volvo and licensed to Geely, available with either a conventional stick shift or a dual-clutch automated transmission developed in-house by CEVT, and it will also come with either front- or all-wheel drive. All Lynk & Co models will also be available with hybrid and plug-in hybrid powertrains. The CMA architecture allows for pure electric versions, as well.

CEVT chief Mats Fägerhag says the goal for Lynk & Co is to have vehicles with Swedish safety, German ride and handling, and Silicon Valley technology and connectivity. (For a full interview with Fägerhag, see page 24.)

Dynamically, Lynk & Co vehicles will "compete with the best models in the class," Fägerhag says. "We want a premium driving experience."

Inside, what most consumers will notice first is the cleverly executed 10.1-inch infotainment interface in the center console, where the screen is embedded in a single surface that stretches down to surround the analog HVAC controls. The screen will be configurable, allowing users to choose their own background images, and the car will automatically adjust



SAFE, TOO In addition to looking good, the 10.1-inch touchscreen offers 360-degree views.

FIRST LOOK





the ambient lighting settings to complement it. The instrument panel is also digital and configurable.

Lynk & Co will differ in other ways, too. Vehicles will be sold online or in factory-owned stores in strategic retail locations with fixed and transparent prices, and they will be delivered and picked up for service directly at the door of the consumer. That may run afoul of state dealer franchise laws (which Tesla is contesting now), but Lynk looks to get around those strictures by planning an unconventional approach to marketing and distribution that focuses heavily on what Geely sales and marketing boss Alain Visser calls “subscriptions.” Basically, that entails lease deals that enable people to drive a Lynk & Co vehicle for a monthly price, group together to share access to a vehicle, or even allow the vehicle to be used by others for short-term rental, like a Zipcar. **Angus MacKenzie**



2018 Mercedes-AMG E63

Anticipation for the 2018 Mercedes-AMG E63 sedan began building when Stuttgart unveiled the 10th-gen E-Class in January, and it's finally here.

Both flavors receive a sportier hood than the outgoing version. Wheel arches are 0.7 inch wider, and the new grille has twin louvers in silver chrome with vertical black struts. There is also subtle AMG badging, a wide front bumper, and a big front splitter for better cooling. Chrome inserts on the E63 S will help tell it apart from base models. The inside gets a subtle blast of color that ripples from the doors across the dash and around the console.

But of course, the most interesting details are under the hood. In the E63 S, the 4.0-liter V-8 and its twin-scroll turbochargers put out a thundering 603 hp and 627 lb-ft of tire-shredding torque; 0-60 takes only 3.3 seconds, and top speed is electronically limited to 186 mph. The base E63 is no slouch, either, with 563 hp and 553 lb-ft on tap. It will still get you to 60 mph in 3.4 seconds before topping out at 155 mph. The engine is also fitted with a cylinder deactivation system to save a few drops of fuel.

The AMG Speedshift MCT, a nine-speed automatic transmission, is also new. The E63 is only available in all-wheel drive, both models receiving the AMG Performance 4Matic+ system. Torque distribution on the front and rear axles is fully variable for the first time and ensures optimum traction right up to the physical limit, Mercedes says.

Following its debut at the Los Angeles Auto Show, the 2018 Mercedes-AMG E63 sedan will go on sale in the summer of 2017. **Ed Tahaney**



From the *Motor Trend* Archive...

REARVIEW



50

**FEBRUARY
1967**

PRICE: \$0.50

We went behind the scenes on the



30

**FEBRUARY
1987**

PRICE: \$2.50

The '80s were an interesting time. Our cover teased the COTY with a *Back to the Future*-inspired font. The winner: the Ford Thunderbird Turbo Coupe, not a DeLorean.

10

**FEBRUARY
2007**

PRICE: \$4.99

“Bite me!” says the new Viper, which was positioned to take the legs out from under the Corvette Z06. We also pitted the V-10 Audi S6 and BMW M5 against the Mercedes-Benz E63 AMG V-8.

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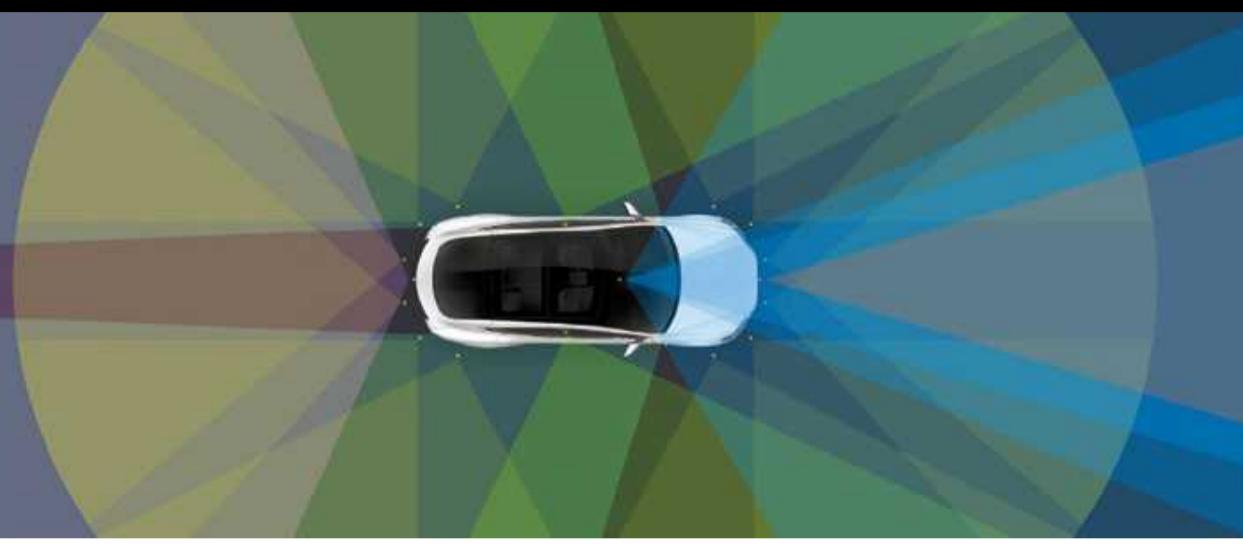
Jaguar has killed plans to launch a high-performance XF sedan to battle the Mercedes-AMG E63, the forthcoming BMW M5, or Cadillac CTS-V. A clay model of an XF concept was completed early last year, but the project was killed after JLR management decided the development money would be better spent on a 550-hp SVR version of the Jaguar F-Pace SUV. Why? Simple math. The F-Pace outsells the XF three to one.

While Jaguar has the SVR

F-Pace under development, the Land Rover crew is working on a four-door Range Rover coupe based on the F-Pace's aluminum-intensive D7a architecture. The significance here is that D7a is JLR's road car-oriented hardware; the Range Rover and Range Rover Sport are built on the off-road-optimized D7u architecture shared with the new Land Rover Discovery. Code-named L560, the rumored Range coupe is said to be longer and lower than the F-Pace, and there will naturally be a 550-hp SVR version. **Although**

Porsche put a coupe version of the new Panamera on the back burner for fear it would compete with the forthcoming Bentley Continental GT, sources say big, fast two-doors are not off the menu. Serious consideration is being given to a two-door coupe version of the next-gen Cayenne.

Porsche wants the next Cayenne to set the dynamic benchmark for ultra-sporty SUVs, with four-wheel steering expected on top-spec models. **The vertical-bar grille of the new Mercedes-AMG GT R**, inspired by the 1952 300SL racer that won the Carrera Panamericana road race in Mexico, is coming to more Mercedes-AMG models. The grille will appear on eight-cylinder 63 and four-cylinder 45 cars and SUVs, beginning with the AMG GLC63 SUV. The E63 is the last Mercedes-AMG with the old grille, but sources say it may get the GT R's toothy grin as a mid-cycle face-lift.



New Teslas Get Autonomous Tech with a Temporary Catch



All Tesla vehicles built since October and going forward come with the hardware necessary for full autonomous driving. The current Autopilot system is capable of Level 2 autonomy, but Tesla CEO Elon Musk said in a conference call that the new hardware will be capable of Level 5 operation.

Called Autopilot Hardware 2, the new equipment suite uses eight cameras, three of which are forward-facing, to cover 360 degrees around the car at a range of up to 250 meters. In addition, Hardware 2 features 12 updated ultrasonic sensors, which can detect objects at almost twice the range of the current system. Forward-facing radar returns, but it gets a processing upgrade and a redundant wavelength, which provides additional data. This allows the system to see through rain, fog, dust, and even the car in front, according to Tesla. What makes Hardware 2 possible is the new onboard computer with more than 40 times the computing power of the unit in previous Autopilot systems.

Tesla previously announced that the Model 3 will come standard with the Autopilot Hardware 2 suite. Here's the catch: Before activating it, Tesla will run the sensors in "shadow mode" over



I SEE YOU ... New computers, cameras, and sensors combine for enhanced Autopilot capabilities.

millions of miles to ensure the improvements work as intended. After the features have been validated, they'll be enabled via an over-the-air update.

More bad news: No more free electric rides for new Tesla owners. Tesla announced an update to its Supercharging program, wherein all models ordered after the end of 2016 will get annual credits at its Supercharger network—good for about 1,000 miles. After that, owners will have to pay to juice up their Tesla on the road.

Vehicles bought before January 1, 2017, will still get unlimited free charging. Tesla says that the "small fee" to quickly charge new Teslas after the complimentary 1,000 miles will still cost less than the price of a tank of gas in a comparable car.

"All cars will continue to come standard with the onboard hardware required for Supercharging. ... While prices may fluctuate over time and vary regionally based on the cost of electricity, our Supercharger Network will never be a profit center," the company stated in a press release.

More specifics are still to come.

Alex Nishimoto and Ed Tahaney



To some, sunglasses are a fashion accessory...

But When Driving, These Sunglasses May Save Your Life!

Drivers' Alert: Driving in fall and winter can expose you to the most dangerous glare... do you know how to protect yourself?

In the fall and winter, the sun is lower in the sky so it rises and sets at peak travel periods. During the early morning and afternoon rush hours many drivers find themselves temporarily blinded while driving directly into the glare of the sun. Deadly accidents are regularly caused by such blinding glare with danger arising from reflected light off another vehicle or snowy and icy pavement. Yet, motorists struggle on despite being blinded by the sun's glare that can cause countless accidents every year.

Not all sunglasses are created equal. Protecting your eyes is serious business. With all the fancy fashion frames out there it can be easy to overlook what really matters—the lenses. So we did our research and looked to the very best in optic innovation and technology.

Sometimes it does take a rocket scientist. **A NASA rocket scientist.** Some ordinary sunglasses can obscure your vision by exposing your eyes to harmful UV rays, blue light, and reflective glare. They can also darken useful vision-enhancing light. But now, independent research conducted by scientists from NASA's Jet Propulsion Laboratory has brought forth ground-breaking technology to help protect human eyesight from the harm-

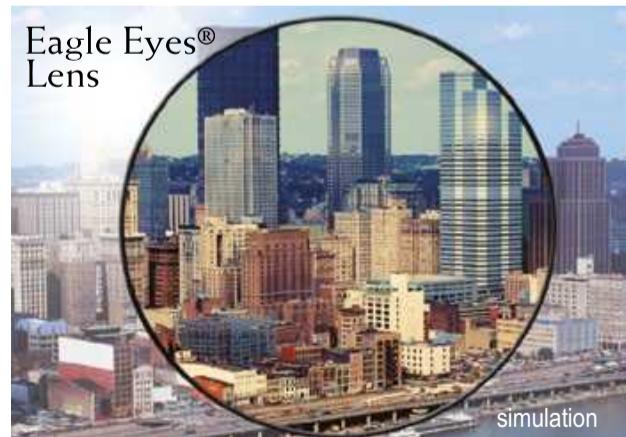
ful effects of solar radiation light. This superior lens technology was first discovered when NASA scientists looked to nature for a means to superior eye protection—specifically, by studying the eyes of eagles, known for their extreme visual acuity. This discovery resulted in what is now known as Eagle Eyes®.

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We Say...

What the Trump presidency may mean for the future of the auto industry



Donald Trump may shift his rhetoric and policies on a seemingly daily basis, but you can be certain that his administration will have an effect on how the auto industry operates and, in turn, affect the cars you can buy and drive.

Many of Trump's statements to date raise more questions than answers:

Manufacturing A key Trump campaign refrain was bringing manufacturing jobs back to America. The auto industry has added nearly 350,000 jobs in U.S. facilities since

2009 (granted, compensating for huge layoffs early in the 2008 recession). But many of these new jobs at auto factories—even unionized ones—don't pay what they used to. Manufacturing workers once earned a wage significantly higher than the U.S. average, but by 2013, the average factory worker made 8 percent below the median wage. And auto sector workers made even less than that, according to the National Employment Law Project. Trump won the vote in 12 of 14 states where there are car-manufacturing plants (winning over many union voters in the process). So, how well-paying will these new factory jobs be? And if there is wage strife at these new plants, how will his pro-business administration react?

Trade Trump blistered Ford for moving small-car manufacturing to Mexico, and GM for its \$5 billion expansion there. He has threatened to impose tariffs on cars imported from NAFTA assembly plants—which means Canada as well as Mexico. Automakers imported more than 2 million vehicles from Mexico into the U.S. in 2015. That's one in eight new cars sold here. No word on what Trump thinks of foreign automakers such as Toyota, BMW, Honda, and

You can
be certain
**Donald Trump's
administration will
have an effect on the
auto industry.**

Hyundai continuing their manufacturing expansion in the low-cost American South—building vehicles here but taking the profits overseas. And Trump's pledge to cancel the Trans-Pacific Partnership could cause major trade upheaval with Japanese and Korean automakers.

Fuel economy Automakers have begun lobbying the Environmental Protection Agency to relax the 54.5 mpg CAFE standard due in 2025. While there have been great fuel economy gains achieved, the current cheap-gas situation means consumers are buying bigger, thirstier cars, SUVs and trucks. That wrecks any automaker's CAFE rating, regardless of good intentions. John Mashburn, a Trump senior policy adviser, said the new administration would conduct "a review of the fuel-economy and emissions standards to make sure they are not harming consumers or American workers." Speaking of emissions ...

The EPA Trump alarmed environmentalists by appointing climate-change skeptic Myron Ebell to lead the EPA transition team. Ebell is chairman of the Cooler Heads Coalition, whose mission is "focused on dispelling the myths of global warming by exposing flawed economic, scientific, and risk analysis." Given that, it seems as though regulation and enforcement could be on the wane. California Gov. Jerry Brown has said, however, that his state will continue its stricter environmental standards. Nine other states follow California's emissions laws.

Electric cars One attractive part of buying an EV is the \$7,500 federal tax credit. But Trump's claim to slash wasteful government spending could

Mark Rechtin
REFERENCE MARK

make this a coveted (albeit symbolic) line item to eliminate. That could put a sting in the launch of the Tesla Model 3 and Chevrolet Bolt EV. That said, California still has its ZEV initiative, followed by nine other states, which requires that 15 percent of cars sold be zero-emission vehicles by 2025. Much like with emissions standards, a clash between federal and state regulations could be in the offing.

Financing Despite his populist posturing, Trump and the Republican leadership have given signals that they will defang the Consumer Financial Protection Bureau. *The National Law Journal* predicted that the Trump administration will "soften the agency's enforcement approach." The Consumer Financial Protection Bureau has battled discriminatory auto loan lending practices such as forced arbitration, artificially inflated interest rates, high-risk subprime loans, and shady debt-collection practices. As the CFPB has already been a Beltway hot potato in terms of its aggressive regulation, this agency could be gutted by a Trump administration.

Summary Despite Trump's campaign promises to topple Washington's status quo, it may prove difficult to unwind decades of intertwined regulation without consequences. Expect lawmakers to have a field day determining which new policies can effectively be enacted. ■



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Prototype shown with options. Production model may vary. 1. 2017 Prius Prime EPA-estimated combined MPGe. Actual MPGe will vary and is dependent upon many factors, including charging practice, driving style, road/traffic conditions, outside temperature, air conditioning control levels, payload/cargo weight, proper tire pressure, vehicle maintenance, battery age and changes in energy costs. Battery capacity will decrease with time and use. For more information on MPGe and range, please see www.fueleconomy.gov. 2. EPA-estimated combined MPG equivalent of non-luxury plug-in hybrids, as of November 2016. Actual MPGe will vary based on driving habits, charging practice, battery age, weather, temperature and road/traffic conditions. Battery capacity will decrease with time and use. For more information, see www.fueleconomy.gov. 3. Based on [fueleconomy.gov](http://www.fueleconomy.gov) non-luxury plug-in hybrids, when fully charged, using gas and electricity. Actual mileage will vary. 4. 2017 Prius Prime EPA-estimated range rating when fully charged and with a full tank of gas. Excludes driving conditions. Actual mileage will vary. ©2016 Toyota Motor Sales, U.S.A., Inc.



Frank Markus
TECHNOLOGUE

We Say...

High-Octane The key to efficiency?

> Everyone from Nostradamus to the Department of Energy predicts that internal combustion engines will provide primary propulsion for the majority of the vehicle fleet for a few more decades. But it's looking like the auto industry may fall short of the forthcoming fuel economy/CO₂ standards landing in 2025. Rather than tweaking the standards, maybe it's time to look at CO₂ reduction from a more holistic standpoint—by designing the next generation of engines to work with higher-performing, higher-octane fuels and examining CO₂'s impact on a well-to-wheels basis.

How could higher-octane fuels help? "The real key is the ability to design the engine with a higher geometric compression ratio," Chris Cowland, FCA's director of advanced and SRT powertrains, says. "We'd like to be running between 14:1 and 15:1 from a thermodynamic perspective to give us part-load fuel efficiency and also enable us to generate higher power densities." Higher octane prevents harmful engine knock at high compression and enables more extreme Miller- or Atkinson-cycle operation (even higher expansion ratio with delayed intake-valve closing to reduce effective compression with or without supercharging). What's his ideal octane rating? The answer requires an octane primer.

Most of the world classifies gasoline using only a research octane number

(RON), but in the U.S. we use an anti-knock index (AKI). This averages the research and motor octane numbers—(RON+MON)/2. These two figures are obtained via different knock tests using single-cylinder laboratory engines, with the difference between RON and MON referred to as fuel sensitivity. Cowland suggests the optimal target fuel would raise the RON to 98 while reducing MON slightly for a greater fuel sensitivity. "It's been proven on high-boosted engines that high MON levels actually hurt us from a knock perspective."

So why not go even higher than 98 RON (which is available outside of the U.S. today)? "Higher RON values allow us to stretch efficiency farther," Cowland adds. "But if we look at the well-to-wheels efficiency, including producing the fuel, we would not actually be environmentally positive." In other words, it's a bit pointless to produce very efficient engines requiring a fuel that's more CO₂-intensive to produce.

Octane can be boosted using metals, ethers, aromatic chemical additives, or alcohols. Good old tetraethyl lead was banned as of 1996, and methyl tertiary butyl ether (MTBE) demonstrated a nasty habit of Houdini-ing its way out

of storage tanks and into ground water, earning itself an effective national ban in 2005. Aromatics do much of the octane boosting today, but some are being linked to health problems. Ethanol increases octane, and when made from bio feedstocks (as is generally the case here), it improves the lifecycle CO₂ picture. But its reduced energy content erodes volumetric fuel efficiency, so any CAFE regs predicated on miles per gallon of a fuel containing more than today's 10 percent ethanol would require revision.

Dan Nicholson, GM's VP of global propulsion systems, is quick to point out that the U.S. Council for Automotive Research (a consortium of GM, Ford, and FCA) Fuels Working Group "is focusing on the characteristics of the fuel, not how it's made. We're trying to enable a spec that's as tight as necessary but as open as possible to encourage innovation among fuels and additives companies."

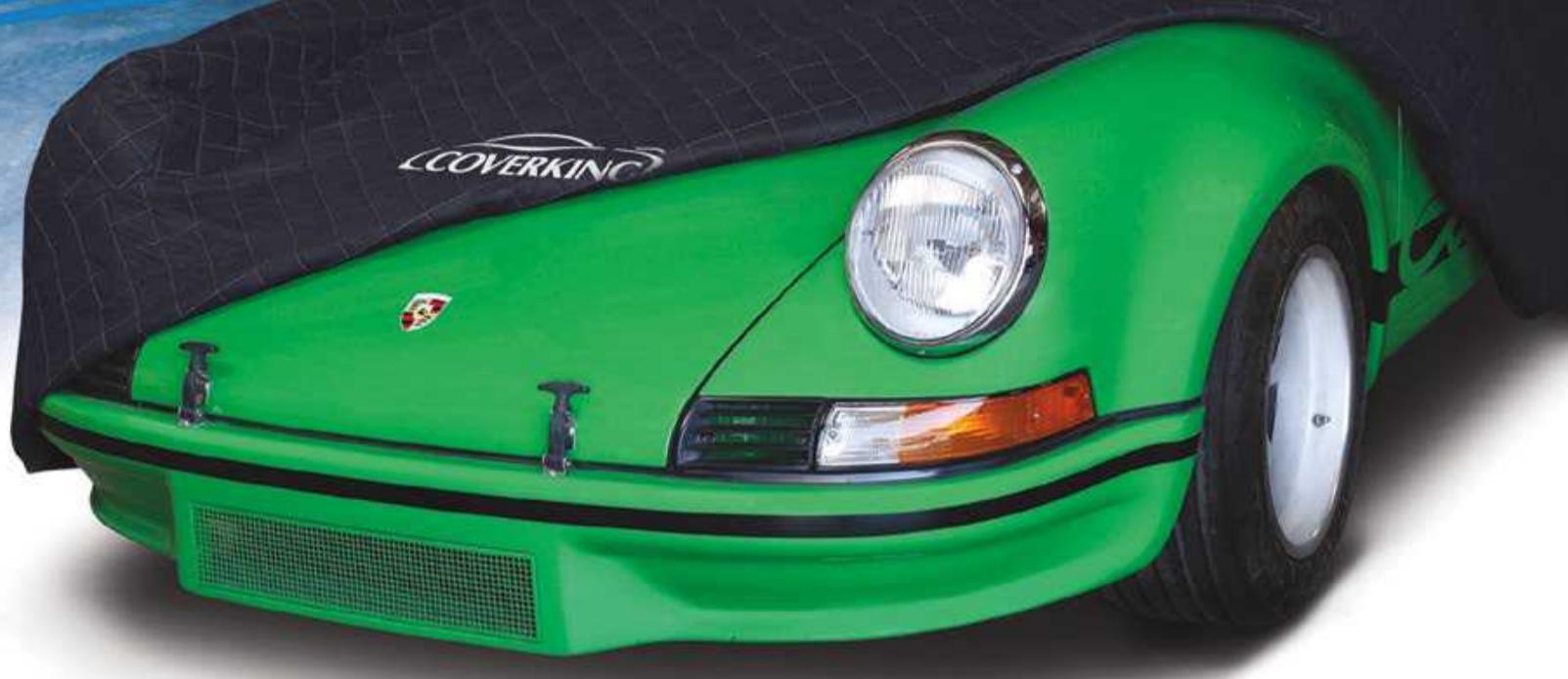
Nicholson and Cowland both envision this new fuel being dispensed via unique nozzles that prevent misfueling older cars and hence "wasting" added octane that won't benefit older engines. They also stress that the sooner the government, auto, and oil industries can agree upon a standard, a regulatory framework, and a distribution rollout plan, the sooner the three- to four-year development clock can begin ticking for manufacturers to develop 98-RON-optimized engines. ■

Maybe it's time to look at CO₂ reduction from a more holistic standpoint.

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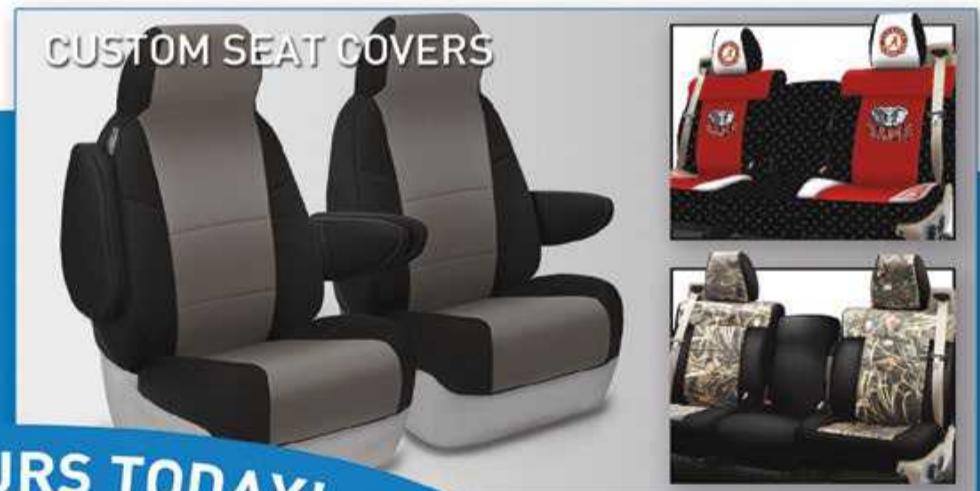


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They Say

Mats Fägerhag

CEO, CEVT

► You've probably never heard of Mats Fägerhag, or of CEVT. But the 54-year-old Swedish engineer and the business unit he heads are going to have a major impact on the global auto industry over the next five years. CEVT stands for China Euro Vehicle Technology, and it has been established by Chinese automaker Geely as a vehicle development center for the Volvo and Geely brands and Geely's new global brand, Lynk & Co, which will begin selling cars in the U.S. in 2018.

Fägerhag was head of R&D at Saab and head of vehicle engineering for GM Europe. He joined Volvo in 2012, and in 2013 he started work on what is now known as CMA, a highly flexible vehicle architecture designed specifically for vehicles in the highly competitive C-segment dominated by cars such as Golf, Corolla, and Focus. The Lynk & Co 01 SUV unveiled in Berlin in October is the first vehicle developed on CMA, which will also be shared with the next-generation Volvo XC40 and S40/V40 and numerous Chinese-market Geely models.

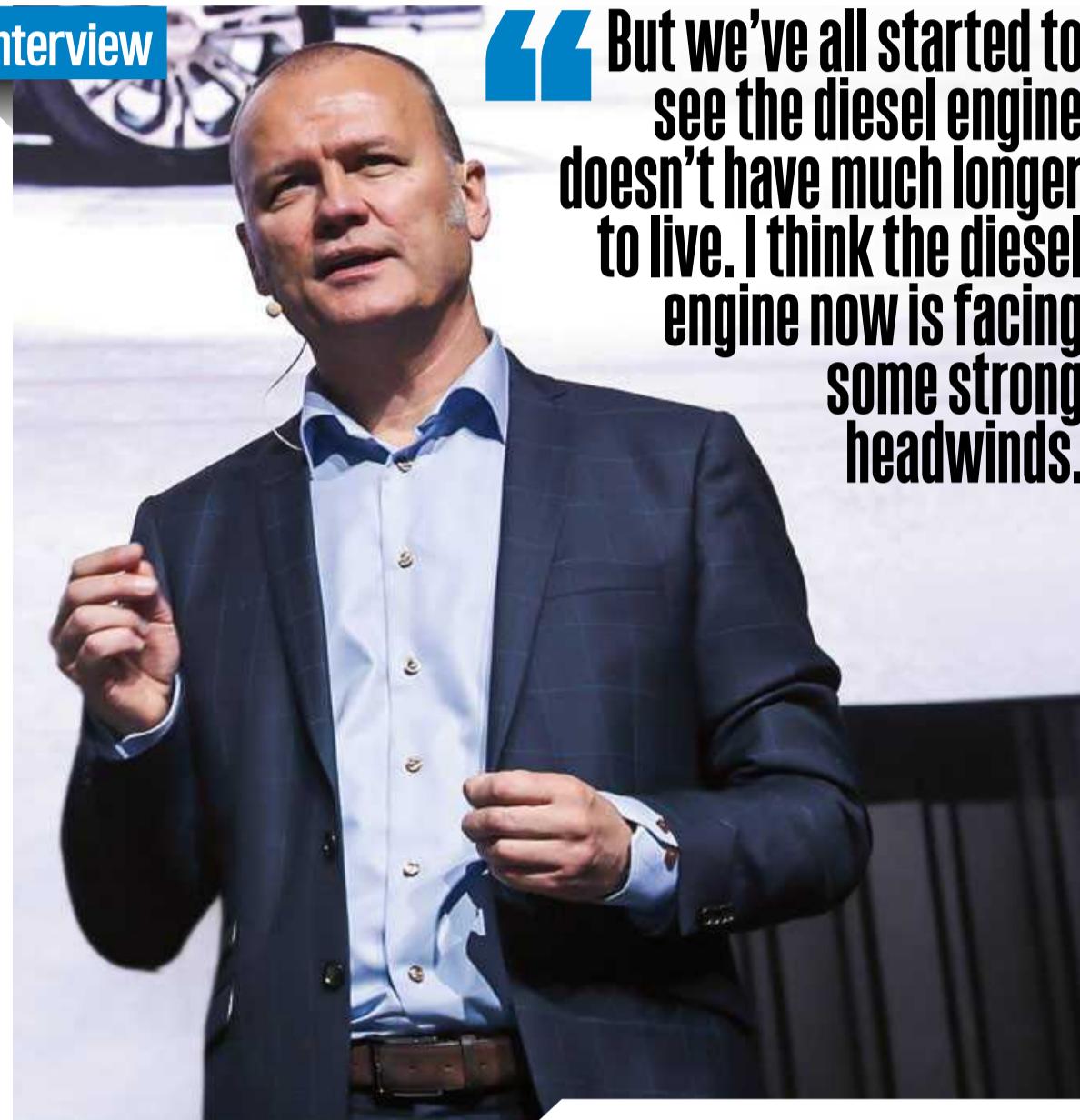
What makes CMA different?

One of the challenges with platforms is how you transfer the loads in a front crash impact. In cars I did at GM, we took a lot of the loads in the tunnel area. But what we have done with CMA is take all the loads around and behind the front wheels to the sides of the floor so we could earmark the floor space for batteries. We have some unique patents where the load beams curve out behind the front wheels and to the sides of the floor, and some structural elements you don't see on other cars.

You've engineered room for batteries, so obviously we'll see electric Lynk & Co vehicles soon.

When we started the project, we asked how the future was going to look. What we know about diesels today, we didn't know at that time, but we had the very strong view that electrification was coming. Nobody knew how quickly full-electric vehicles would arrive. I still don't

Interview



“But we've all started to see the diesel engine doesn't have much longer to live. I think the diesel engine now is facing some strong headwinds.”

think we know. Batteries are heavy and require a lot of volume to package. And even if they're empty, they're still heavy. But electric motors, which are compact and have high torque from zero rpm, are a fantastic way to propel a vehicle.

So you don't think diesels have a future?

We have a family of engines with three and four cylinders—petrol and diesel—and of course the architecture is prepared for those. But we've all

started to see the diesel engine doesn't have much longer to live. I think the diesel engine now is facing some strong headwinds.

What other Lynk & Co vehicles are coming in addition to the 01 SUV?

We have talked about hatchbacks, sedans, and crossovers.

You were given a clean sheet of paper with CMA. A once-in-a-lifetime opportunity?

This was so fresh and interesting because [Geely] Chairman Li [Shufu]'s view was that we were going to invest in everything. It's quite amazing how much you get from the Chinese in terms of a willingness to invest, a willingness to take risks, and a willingness to be successful. The number of vehicles we have now in the pipeline is more than I had when I was at GM Europe. **Angus MacKenzie**



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Your Say...

READERS' THOUGHTS ON PAST ISSUES

Best Driver's Letters

In the "Best Driver's Car" evaluation your testers determined that the McLaren 570S beat out the Chevrolet Camaro SS (1LE). Sure it did. However, for \$219,770 I believe GM would sell five of those exact Camaro SS cars to any serious buyer. I suggest a second category that you folks could consider. One category would be for the outright winner and the second category would be for the winner of the "Atta Boy" trophy given to the best overall practical winner. If GM marketed a "super car" for \$219,770, I believe it would likely blow the McLaren and other contenders out of the water. I still look forward to a mid-engine Corvette that will turn the tide in GM's favor once and for all (especially if it were all-wheel drive), and I suspect it would be sold for under \$100,000.

PHILIP CARAVELLA SAINT AUGUSTINE, FLORIDA

"Practical" is in the eye of the beholder, so we probably won't be handing out a second trophy any time soon. Especially because one could argue the second-place Ford Mustang Shelby GT350R, \$66,990 as tested, is itself a pretty practical contender. And believe us, we'd LOVE an opportunity to see what a six-figure mid-engine Corvette could do.—Ed.

Say What? No Z06 ... no Grand Sport ... no 'Vette at all? Yeah, yeah, I know. One per manufacturer and all that. And I even get Ferrari and Lambo not wanting to be seen as "lagging." But an article claiming to pick the world's best driver's car WITHOUT a Corvette is itself "lagging."

BILL ROBESON HUNTINGTON BEACH, CALIFORNIA

We tried to get the Grand Sport into the competition, but the timing didn't work out. Chevy unveiled its latest Corvette right as BDC was getting underway. But there's always next year.—Ed.

"Basic, engaging, less powerful, lighter, quicker, organic, telepathic." Are you sure there wasn't a Lotus badge somewhere on that 570 S?

BRUCE OBLAD NORTH SALT LAKE, UTAH

P.S. Yes, I own an Elise. We checked. No Lotus badge. But we're

hoping we'll be able to find one for you somewhere in time for next year's Best Driver's Car competition.—Ed.

It appears that Christian Seabaugh wrote down his Dodge Viper lap time as he was consummating his automotive relationship—OH ONE ... OH ONE ... OH ONE. Can't wait for his lapping of the forthcoming ZR1—OH OH ... OH OH ... OH OH ... ahaaaaa. What a ride!!!

LERoy JOHNSON MENOMONEE FALLS, WISCONSIN

We got roughly 10,101 emails correcting this oversight—the Viper actually ran a 1:31.58, as we noted elsewhere—but this was our favorite. Two other quick corrections: the Camaro's 60-0 stopping distance is 94 feet, which was misattributed once, and the

READERS ON LOCATION

BRENT SCHULZ of Apple Valley, Minnesota, spotted this Soviet-era Žuk truck on a recent trip to Kraków, Poland, and he just had to pose for a quick picture. His wife asked him afterward why he found "mind-blowing S3X" so creative. "I tried to explain the whole thing to her," he says, "but sadly, she still didn't really get it."



DESIGN CRITIQUE OF THE MONTH

"Sir William Lyons must be turning over in his grave."

Mercedes-AMG GT S' horsepower and torque curves should have intersected at 5,252 rpm, as that car is subject to the same laws of physics as the others.—Ed.

Self-inflicted wounds?

Is it just me, or have you also noticed that the cars that tend to have the reliability problems in BDC—Z06 last year, Merc-AMG GT S this year—are the ones you're using to do the donut-drift cover shot? Don't get me wrong, I love the tail-out, tire-smoking drama as much as the next enthusiast, but is there not, possibly, some connection?

Along similar lines, in Christian Seabaugh's long-term verdict of the Corvette Z51, he gripes about the interior squeaks and rattles in the Stingray (which undercuts its main rival, the Porsche 911, by at least \$25K, price-wise) right after mentioning that he can take "speed bumps at, well, speed." That kinda reminds me of the lady I saw at the pharmacy some time ago, buying cigarettes and her emphysema meds (Really!) at the same time!

Otherwise, thanks for the great magazine—and the laughs.

RAYMOND A. WILLIAMS NOTTINGHAM, NEW HAMPSHIRE

Those fancy cover shots are the very last thing we do for each year's BDC. In fact, the 2015 cover didn't even have the same Z06. That was a replacement after the first one broke. And we swear Christian drove the 'Vette no differently than any of our other cars, so the squeaking critique still stands; what he meant by "at speed" was really "at the speed the speed bump is intended for." (But then again, he is the guy who's fascinated with the best post-apocalypse getaway cars and Icelandic excursions...).—Ed.

I can't thank you enough for the series of long-term test reports on the 2015 Chevrolet Corvette ("Verdict," November 2016). I considered the car because it checks a lot of boxes: legendary pedigree, great styling, and incredible performance bang for the buck, to name but a few.

Your long-term experience with the car has, however, exposed another check mark: shoddy build quality. Your specific test car suffered from major engine



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failure and various rattles, creaks, pops, squeaks, clangs, and clanks. Unacceptable for a \$65K sports car, and it's now off my list, leaving German and Japanese offerings as the only real possibilities. Sad.

FRANK W. DOWNS
MARIETTA, GEORGIA

Sorry, but we had to cut you off at the point where you went in on the fashion sense of American autoworkers. So what if some of them wear jorts? They're still capable of putting together sports cars with unmatched performance at the price point. Now if only they had the same attention to detail as their jumpsuit-wearing rivals in Stuttgart.—Ed.

Maybach makes us say Ye

Perhaps Mercedes should name the Vision 6 after the “inspiration” for this concept: the Kim Kardashian. Talk about overhang!

FRED STEWART
WYLIE, TEXAS

If the Mercedes-Maybach Vision 6 is Kim Kardashian, you can call us Yeezy.—Ed.

Why Buicks? Why not?

So I read “Playing to its Strengths” in the November issue. Will someone please explain why the General even bothers with the Buick badge in the United States? Thanks.

HANK MALLUE
WILLIAMSBURG, VIRGINIA

The simple answer: Americans still buy them. As long as enough buyers remain loyal to the LaCrosse you read about in November and the Envision and Encore (page 48) in this issue, GM will probably keep selling them here.—Ed.

They're not over!

I'm a Corvette owner, and I couldn't help but notice a few months back that you did a tire rotation on your long-term 'Vette. I assumed it was a typo, but in the recent issue I see you did a second tire rotation. I mistakenly thought that with different size fronts and rears, my tire-rotating days were over. What am I missing?

BURL BRADY
SALISBURY, NORTH CAROLINA

The Chevrolet Corvette Stingray Z51's tires are not directional, so you can swap side to side for even wear.—Ed.

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The problem: Barraged by K-band false alarms lately? Seems like they're everywhere, and they hang *on* and *on*.

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Mike Valentine
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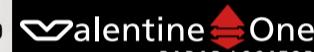
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High Voltage



The Chevrolet Bolt EV and Tesla Model S are the only battery-electric cars in existence that can carry five occupants more than 200 miles on a charge. Both the Bolt EV and Model S 60 have 60-kW-hr batteries, and have the patriotic bonus of being assembled in the U.S.A. So, which one is better, given that you could have two Bolts (after federal tax credits)

for the price of one Model S 60? Is the Tesla actually worth the extra 30 large?

A quick side note: This Bolt versus Model S 60 comparison is the exhibition before a more appropriate title fight—Bolt versus Elon Musk's Tesla Model 3. Set to arrive in late 2017 with a sticker much closer to the Bolt's \$37,495 base price, the compact Model 3 currently has about 400,000 reservation holders, promises to

go at least 215 miles on a charge, and will be available with most of the Tesla tech and mystique the company's fans love.

Until then, however, the only proper comparison to the just-arrived Bolt is the Model S 60, which was discontinued in 2015 and brought back temporarily in June to upsell Model 3 reservation holders who could possibly swing payments on a \$66,000 luxury sedan.

Words Christian Seabaugh
Photographs Evan Klein



TESLA PAVED THE HIGHWAY. THE CHEVY BOLT IS DRIVING IT. HOW THE WORLD'S TWO LONGEST-RANGE ELECTRIC CARS STACK UP.

Until the Model 3 arrives, the Bolt and the Model S 60 are, for all intents and purposes, your only choices if you want an EV that's not only capable of driving you around town but taking you out of town, too.

Over two weeks of testing the 2017 Chevrolet Bolt Premier and Tesla Model S 60 back to back, things got a lot more complicated than expected.

Charging Up With 238 and 210 miles of EPA-rated range, respectively, the Bolt EV and Model S 60 are the first EVs that could conceivably function as a family's lone car.

Despite the differences in price, size, and shape, the two are quite similar. Both are built around their battery packs, the chassis basically a battery pack skateboard forming the car's deck with the bodies built on top. Body-on-battery, if you will.

The benefits of building an electric car this way, as Tesla learned between Roadster and Model S, are numerous. Putting the battery underneath the body allows for better interior packaging, a larger battery, a lower center of gravity, and impressive structural rigidity.

The Bolt's battery, built in South Korea by LG Chem, is the most energy-dense GM has ever put in an EV. The Model S

COMPARISON

battery, nominally 60-kW-hr, can be upgraded to a 75-kW-hr version via a \$9,000 over-the-air software upgrade. That'll bump you to 234 miles of range.

The Bolt and Model S 60 differ where each mounts its electric motor. Like a high-priced German sedan, the Tesla opts for rear-drive, with power coming by way of a single rear-mounted AC-induction motor driving the rear wheels. The ultra-efficient motor is good for 315 hp and 325 lb-ft of torque. All-wheel-drive dual-motor versions are also available.

Like most other compact EVs, the Bolt goes with front-wheel drive. The front-mounted motor also drives the front wheels directly with a single speed, and it's good for 200 hp and 266 lb-ft of twist.

The Tesla Model S 60 may not brutally assault your senses like a Ludicrous-enhanced Model S P100D will, but stomp on the accelerator from a standstill, and the Model S 60 hooks up and rockets forward like only an electric car can. Accelerating from 0 to 60 mph takes this Model S 5.0 seconds, and the quarter mile falls in 13.6 seconds at 103.5 mph. Aided by regenerative braking and arguably the best-feeling brakes ever fit to an electric car, the Model S comes to a standstill from 60 mph in 121 feet. The Model S 60 lacks the stickier tires of Tesla's high-performance models, but it can still hang on the figure eight, lapping the course in 26.5 seconds while averaging 0.70 g.

The Bolt is slower, but not by much. It'll do 0–60 in 6.3 seconds and motor through the quarter mile in 14.9 seconds at 93.1 mph. Those are serious hot-hatch numbers, on par with the VW GTI or Ford Focus ST. The Bolt does need more real estate than the Tesla to stop, with 60–0 taking 132 feet. Limited by low rolling resistance tires, the Bolt's figure-eight time is 27.6 seconds at a 0.64 g average.

To test real-world performance, we devised a 62-mile drive loop in the California high desert. The cars would be driven as near identically as possible over the 84-degree day. Cruise control would be set to the same speed on the highway, air-conditioning would be run at 72

FRUNKED One of the benefits of the Tesla's sedan shape is lots of storage space in two trunks.



SILICON VALLEY This interior could have only come out of an automaker that got its start in the Bay Area.

degrees, and the speed limit wasn't to be exceeded by more than 5 mph.

The Tesla is a known quantity by now, but it continues to impress, especially on the highway. On the interstate, it zips up to speed, the wind noise and passing scenery the only real indicators you're on the move. The Tesla's cabin is serene on the highway; it's a place you can happily spend some time as you leapfrog from Supercharger to Supercharger. The semi-autonomous Autopilot system, which has gotten its share of bad press lately, is still a technological marvel, reducing the driver's workload by an order of magnitude and making the driving experience a stress-free affair while on a well-marked

highway. Tesla drivers aren't just buying into the electric car. They're buying into such futuristic technology, as well.

Around town, the Model S drives with the authority of a big luxury car as it silently stalks traffic. Its deceleration is noteworthy as the regenerative brakes progressively kick in, meaning you can drive with just the accelerator pedal. Tapping the brake pedal nets you old-school mechanical braking if you need it.

It's decent around corners, but the chassis is missing the \$2,500 air suspension found on the higher-trim Model S. There's a bit more body roll in corners, and our tester's 19-inch wheels with hard all-season tires struggle a bit for grip.



In town, the Model S drives with the authority of a big luxury car as it silently stalks traffic.

But it still sports good steering feel and elegant ride quality over poor pavement.

As for the Bolt, there are effectively two ways to drive it: like a traditional gas-powered car or like an EV. Knowing its budget-friendly sticker price will have the Bolt seeing many EV first-timers, GM baked two distinct driving modes into the Bolt's one-speed transmission. Drive is designed to ease the owner's transition from piloting a gas vehicle to an electric one. This mode has the Bolt mimicking the sensation of a car powered by an internal combustion engine—creeping forward from a stop with your foot off the brake and with a slight slowing when off the throttle and coasting at speed, allowing the driver to coast with the flow of traffic. Low mode will feel familiar to any driver with previous EV experience; it has all the heavy regenerative braking effects the Tesla has. Regeneration can be ramped up further by pulling the On Demand paddle on the left side of the steering wheel—modulating the throttle and pulling the paddle are generally enough to bring the Bolt to a stop while maximizing your energy savings without ever tapping the brake pedal.



DETROIT DOES The Bolt's dash is a bit more traditional, although it still features a lovely large infotainment screen and a fully digital instrument cluster.



INTO ENEMY TERRITORY

"OK, we're going to do it," I insisted. "We're going to drive into the Tesla Design Studio next to SpaceX, park the two Bolts at Supercharger stations, and see what happens." Provocative. The Bolt is the upcoming Model 3's prime nemesis, and the Model 3's design is being polished right inside that building.

"No, no. It won't work!" I answered myself. "The Tesla guards will chase us away. Waving light sabers—or something even worse than Elon dreamed up."

Pause. "OK, we'll go—but we'll be ready to run away very quickly."

Our destination in Hawthorne, California, might as well be billed Muskland. Walk 500 feet, and you could tour one billionaire's vision of future-tech human travel: the electric cars in the Tesla Design building we're approaching, SpaceX's rocket complex to its east, and to the south a mile-long, half-scale Hyperloop demonstrator tube being assembled along Jack Northrop Drive.

First thing, we encountered the jarring contrast between the Chevy's industrial-dork 50-kW SAE combo receptacle and Tesla's slinky Supercharger plugs. Incompatibility is not the right word. Trying to plug one into the other would be like inserting an über-efficient Cree LED into Thomas Edison's 1879 incandescent socket.

We walked into the lobby and announced ourselves to the grim-looking guy sitting in for a presumably perkier receptionist named Mary. "Hi! We're *Motor Trend*, and we've got a couple of Chevy Bolts outside. Anybody want to check them out?" The guy studied us then flatly replied, "I'll send an email." We went outside to await the Stormtroopers.

After a few minutes, the doors swung wide, but instead of laser-blasting droids, out spilled designers and 3-D modelers and interior specialists. They crouched down to look below the bumpers. Others climbed inside, felt the surfaces, studied the fabric's stitching. All rapidly chatting, pointing, exchanging glances. Finally, Tesla's chief designer, Franz von Holzhausen, emerged.

"Ah, aren't you upset that a couple of Bolts have shown up here?" I asked.

"No, no. We're all car guys," Franz beamed. "Come by anytime you have something interesting." Huh. So that we actually are



TASTE MAKER Tesla designer Franz von Holzhausen ponders the Bolt's interior. Is that a camera, Franz?



NO CHARGE The Bolt can't recharge at a Supercharger, but the Tesla team was still shocked to see the Chevy.



TEMPTED TESLARATI? Dennis Pascual (center) rounded up some Tesla owners to critique the Bolt.

welcomed back, I won't repeat any of their comments. But there were lots of fingers feeling the dash materials amid quizzical looks.

Our experiment wasn't finished. To get some Teslarati opinions on the record, I asked Dennis Pascual, organizer of the Orange County Tesla Club, if his group would like to check out the Bolt. Three days later, 15 Teslas—including a Roadster—pulled into a Starbucks in Huntington Beach. After some quick rides up and down the street, I asked the freighted question: "So what do you think?"

Jamie Dow, Roadster owner: "One of the biggest benefits of an electric car is instant throttle response. I'm very impressed by the Bolt's power and regen. But you shouldn't have to select [Low mode] every time you get in."

Phil Tipper, i3 owner and former

Leaf driver who has reservations on two Model 3s: "One question is whether the lack of a Supercharger network is a deal-breaker. I know that this Bolt will do almost 100 percent of what I need. My other car could be a Model 3 using the Supercharger network, and that would be an excellent mix, as the Bolt's hatchback is important to me."

Suddenly I'm handed a baby girl as Mike Money lifts a child seat in back. "No LATCH hooks? Must be a prototype!" Mike says as he threads the rear belts the old-fashioned way. "The seat fits very well in back, so it's good for a family and kids." After their ride: "It's very sporty, and the center of gravity seems very low."

Of the club, 11 out of 19 have Model 3 reservations. "After seeing and riding in the Bolt, how many of you would now cancel that reservation?" I asked. Phil thought he might swap out one of his, but everyone else, for now, remains under the spell of Mr. Musk's magic. **Kim Reynolds**

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COMPARISON | 2017 Chevrolet Bolt EV VS. 2016 Tesla Model S 60

The experience behind the wheel of the Bolt is shockingly zippy when one might expect cheap econobox performance given its size. The Bolt is a happy little scamp around town. Its small dimensions, torquey motor, and quick steering rack allow the Chevy to bolt (sorry) off the line and dart through holes in traffic. When tearing down back roads, steering is progressive and linear with surprisingly good grip from the eco-oriented front tires, and there's little body roll to speak of. The Bolt feels more like a hot hatch than an eco-friendly electric car. The Chevy is solid on the highway, too; merge onto on-ramps, and the Bolt accelerates quickly and has plenty of passing power on the move. Tire noise in the Bolt is pretty well controlled, but there is without a doubt a fair amount of wind noise in the Chevy—chalk that one up to the Bolt's 0.31 coefficient of drag.

Tesla has conditioned many EV drivers to expect advanced semi-autonomous driving systems in their cars, and the Bolt is trailing in that department. It has old-school cruise control paired with a lane keep assist system that ping-pongs you between lane markers if it hasn't already given up. With autonomous Bolts currently running around San Francisco and Silicon Valley, GM has a self-driving suite in the works. But as it sits today, the Bolt's system is severely lacking.

Nuts and Bolts Despite the Bolt EV's subcompact size, putting the battery beneath the floor and pushing the wheels to all four corners allowed Chevy engineers to build a small hatchback with 94 cubic feet of passenger volume. That's just 1 cubic foot less than the Tesla, which is 32 inches longer. That translates to a spacious back seat for three with room for a 6-foot passenger to sit behind a 6-foot driver. The middle seat is hard and flat, but the seats do at least fold, offering up a flat load floor with additional storage available via the trunk's tiered setup.

The Bolt's interior materials are all price-appropriate and look pulled straight from the cool pages of the Ikea catalog. The ultra-thin front seats are nonetheless comfortable and supportive. The driver gets a reconfigurable high-res 8.0-inch digital instrument cluster, which does a good job of giving the driver only essential information, such as speed, battery state of charge, range, and power usage. Extra nice-to-know info is found in a separate 10.2-inch touchscreen on the center stack. The upgraded MyLink infotainment system includes data on current energy usage, charge time, and more while also functioning as a Wi-Fi hot spot and handling Apple CarPlay duties.

Hop into the Tesla's front seats, and you are greeted by the impressive 17-inch iPad-like display mounted in the center stack. The cabin is well appointed, although with the scratchy base black cloth seats and black wood trim, it doesn't feel as luxurious as better-equipped Teslas. The Tesla's back-seat package is low, so your knees are high, but there's plenty of legroom. Headroom is a bit tight, but that's the price one pays for the massive sunroof. The front and rear trunks do give it a 9-cubic-foot advantage in cargo capacity over the Bolt.

Plugged In Our 62-mile loop sought to answer how much energy the Bolt and Model S use. We also depleted each car's battery and plugged them in to see how long they would take to charge. It wouldn't be a perfect science, but it would be an anecdotal guideline before handing the keys to our Real MPG team.

After the loop in the Tesla, its readout said we had used 78 miles of its estimated 212 miles of range—about 21.5 of the battery's 60 kW-hr over the loop. It had 134 miles of range left. After we ran down the Model S' battery to just 9 miles of range, we rolled into our



BASIC Tesla introduced its Next Generation Seats in 2014, but the old hardware still comes standard.

local Supercharger—Tesla's bespoke 120-kW-hr fast charger. How long did the recharge take? One hour and six minutes. If you don't have access to a Supercharger, the Model S 60 will fully charge in 10 hours from a 240-volt home charger or three hours and 45 minutes with the optional \$1,500 charger upgrade, according to the EPA.

As for the Bolt, we chose the middle scenario of its three driving modes, which indicated about 198 miles of range. When we got back to base, there were 138 miles remaining, indicating we'd used 60 miles of range and 18.4 kW-hr of the battery's 60 available. Once we drained the Bolt battery to 6 miles of range, we plugged it into the fastest available Bolt-compatible charger, a 50-kW-hr Level 3 DC charger. It took a painfully slow two hours and 34 minutes to refill those electrons. On a slower 240-volt home charger, the EPA says the Bolt will take nine hours and 20 minutes to charge from empty. This illustration of the non-Tesla infrastructure is the Bolt's only major shortcoming.

After that anecdotal test, we had in-house EV expert Kim Reynolds and the Emissions Analytics team take a more

The Chevrolet Bolt EV is a happy little scamp around town.



scientific reading. Here's the rundown: The Bolt scores 118 mpg-e combined on the Real MPG cycle in Drive mode and 121 mpg-e in Low. Emissions Analytics estimates the Bolt's range to be 210 miles in Drive and 222 miles in Low; the former converts to 238 miles on the more liberal EPA cycle, and the latter 246 miles. Meanwhile, the Model S scores 101 mpg-e combined on the Real MPG cycle, good for 200 miles of range.

Powerage The Model S remains a technical tour de force three years after its release, and Tesla appears to have no intention of letting its flagship wither on the vine. If semi-autonomous tech and a proven quick-charging capability with worldwide infrastructure for long-distance travel is what you're after, there's really no choice but the Tesla.

Is that worth the \$30,000 premium? Well, if you must travel long distances regularly, possibly. But if simple fuel-free driving is what you're after, the Bolt's stellar real-world range can cover a week's worth of commuting plus errands for the average American without charging. Its 238 miles of range also enable shorter intercity—if not interstate—travel. Toss the Bolt's puppy-dog driving dynamics into the mix with its efficiency and family-friendly packaging, and the choice becomes clear: the Chevrolet Bolt EV wins with an infrastructural asterisk. More than any EV to come before it, the Bolt makes emissions-free transportation realistic for millions of Americans. It has made the current crop of pricey, short-range EVs from BMW, Nissan, and others irrelevant.

Not that GM can rest on its laurels. The Model 3 will be here soon enough, and the rest of the auto industry is catching up. For now, however, the Chevrolet Bolt EV earns the plaudit of being the first mover in affordable, long-distance electric mobility.



WANT MORE TESLA VERSUS BOLT?
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2017 Chevrolet Bolt EV		POWERTRAIN/CHASSIS	
Front-motor, FWD		DRIVETRAIN LAYOUT	
Permanent magnet AC synchronous electric		MOTOR TYPE	
Lithium-ion		BATTERY TYPE	
200 hp @ 4,750 rpm		POWER (SAE NET)	
266 lb-ft @ 0 rpm		TORQUE (SAE NET)	
17.7 lb/hp		WEIGHT TO POWER	
1-speed automatic		TRANSMISSION	
7.05:1/7.05:1		AXLE/FINAL-DRIVE RATIO	
Struts, coil springs, anti-roll bar; torsion beam, coil springs		SUSPENSION, FRONT; REAR	
16.8:1		STEERING RATIO	
2.9		TURNS LOCK-TO-LOCK	
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6.5 x 17-in cast aluminum		WHEELS	
215/50R17 91H (M+S) Michelin Energy Saver A/S		TIRES	
DIMENSIONS			
102.4 in		WHEELBASE	
59.1/59.1 in		TRACK, F/R	
164.0 x 69.5 x 62.8 in		LENGTH X WIDTH X HEIGHT	
35.4 ft		TURNING CIRCLE	
3,548 lb		CURB WEIGHT	
56/44%		WEIGHT DIST, F/R	
5		SEATING CAPACITY	
39.7/37.9 in		HEADROOM, F/R	
41.6/36.5 in		LEGROOM, F/R	
54.6/52.8 in		SHOULDER ROOM, F/R	
56.6/16.9 cu ft		CARGO VOL BEH F/R	
TEST DATA			
2.7 sec		ACCELERATION TO MPH	
3.7		0-30	
4.9		0-40	
6.3		0-50	
8.1		0-60	
10.2		0-70	
12.8		0-80	
-		0-90	
2.9		0-100	
14.9 sec @ 93.1 mph		PASSING, 45-65 MPH	
132 ft		QUARTER MILE	
0.77 g (avg)		BRAKING, 60-0 MPH	
27.6 sec @ 0.64 g (avg)		LATERAL ACCELERATION	
5,800 rpm		MT FIGURE EIGHT	
-		TOP-GEAR REV @ 60 MPH	
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\$41,780*		PRICE AS TESTED	
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8 yrs/100,000 miles		POWERTRAIN WARRANTY	
8 yrs/100,000 miles		ROADSIDE ASSISTANCE	
60 kWh		BATTERY CAPACITY	
128/110/119 mpg-e		EPA CITY/HWY/COMB ECON	
118.0/128.1/121.3 mpg-e** 107.8/131.4/118.0 mpg-e***		REAL MPG, CITY/HWY/COMB	
28.6/26.3/27.8 kW-hrs/100 miles** 31.3/25.6/28.6 kW-hrs/100 miles***		REAL MPG ENERGY CONS, CITY/HWY/COMB	
26/31/28 kW-hrs/100 miles		ENERGY CONS, CITY/HWY/COMB	
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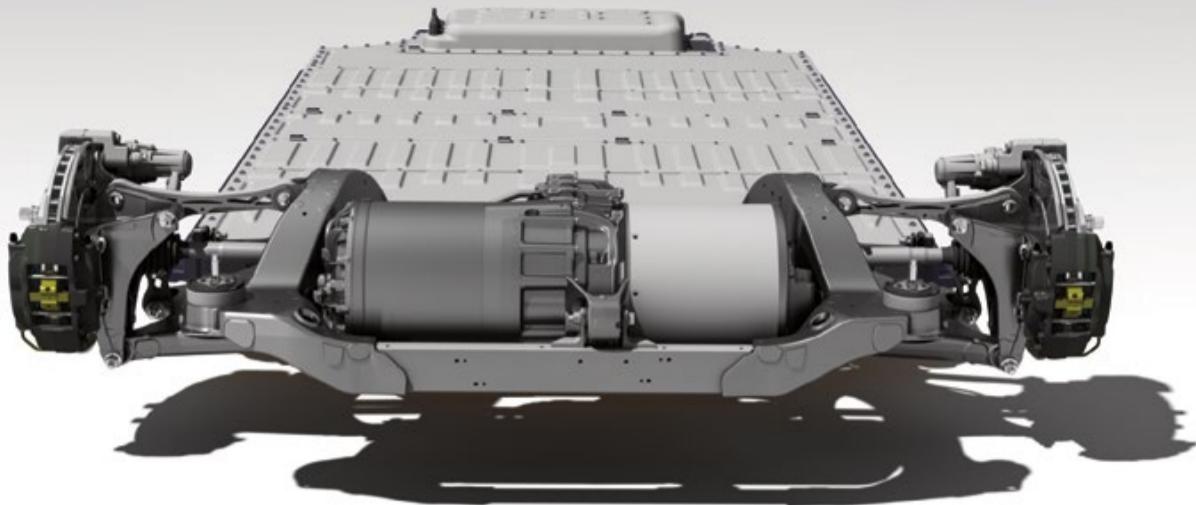


RANGE, CHARGING, AND TRAVEL

Cringe. The idea had been for Ed Loh to deplete the Chevrolet Bolt EV's battery on his return from Tehachapi, 130 miles away. Then I'd arrive in the dead Tesla Model S to document their refills at our chargers (where we'd added EKM meters to measure things like this.) Our plan was perfect.

Except. Our route to El Segundo is seashore-tilted, and I'd been worrying that the 3,900-foot decent would make burning off kW-hrs tougher than Ed reckoned. I climbed into the dark interior and pressed the start button. The display blinked on—glaring, because it's 10 p.m.. And there, in menacing digits, was my worst nightmare—80 miles left. I said it was 10 p.m., right? Eighty miles of range needed to be worn off before plugging it in. Hesitantly, I tapped MapQuest. The free-ways were still in a yellow knot tied by our eternal rush-hour traffic. Expletive deleted.

A more mature take on this is to regard those yellow lines as symbolic, highlighting, if you will, just how much EV batteries have improved. In 1996, I road tested a GM EV1, and during it, we did an informal range test. The car went 55 miles, and at one point, I misgauged things and wound up with both hands on its stern, pushing it down a street. Now my problem was the opposite—too



TREND SETTER Along with its compact powertrain, the Tesla Model S' large, flat underfloor battery has become the template for modern EV architecture.

much range. What to do? I clicked on the seat warmers, cranked up the heater to full hot/max blower, and rolled the windows down to exhaust the heat and foul up the aerodynamics. Even turned up the sound system (can't hurt—err, I hoped it would). Welcome to upside-down land.

A second reconnoiter of MapQuest showed a short, green 2-mile stretch of the 105 freeway, just north of the office. For the next 45 minutes, I ricocheted back and forth between its ends, alternating between mashing the accelerator and braking harder than the car's regen capacity could ingest its kinetic energy.

Earlier, the Bolt's technician/minder had told me that when the battery's state-of-charge gauge illuminates yellow, it's time to find a charger. Yellow appeared—earlier than I expected (evidence of some GM conservatism; conversely, the Model S displays remaining miles down to its very last one). I dashed another lap then headed for the office, 2.6 miles away, and glided toward its nipple of electrical nourishment. Before plugging in, though, I tortured its hunger pangs by leaving the heater blasting to develop a good appetite. After 20 minutes—poof—the Bolt went silent. On its screen, a

message desperately pleaded: "Out of Energy. Charge Vehicle Now!" Done.

The next morning, the Bolt had absorbed 68 kW-hrs of energy, the Tesla 64.7. Is the Bolt's charging that much less efficient? (For those of you without electrical engineering degrees, absorbing more energy is a bad thing, an indicator of inefficiency similar to spilling gasoline at the pump, but instead it's wasted electrons.) However, this was not the case. The Bolt's battery is evidently larger than claimed, its usable size likely larger than its stated 60-kW-hr capacity (which I had run extraordinarily low; GM says a typical charge is 66.6).

To test both cars' range, we decided to treat them just like we do gasoline cars and simply hand their keys to our real-world mileage-measuring partners, Emissions Analytics. True, they wouldn't be attaching a \$150,000 gas analyzer to tailpipes (or be monitoring their uncommunicative OBDII ports, either). But they'd otherwise follow our tried-and-true nose-to-tail city and highway route—veteran of 400 previous tests—while documenting energy use from the display screens, repeating individual road segments to check repeatability, and then baking these disparate results in EA's proprietary correction-analysis oven.

What we found: Our Bolt's combined



FEED ME! This is what appears when you completely deplete the Chevy Bolt EV's 60-kW-hr battery.





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COMPARISON | Chevrolet Bolt EV VS. Tesla Model S 60



energy use of 28.6 kW-hrs/100 miles shadows the EPA's rounded-down measurement of 28, although our observation suggests it actually consumes a bit less energy on the highway than the city. (We got 31/26 kW-hrs/100 miles; EPA got the opposite, 26/31). Meanwhile, the 866-pound-heavier Model S returned a combined 33.3 kW-hrs/100 miles (EPA says 34). What does that mean? The Bolt threads between the original small-battery BMW i3 (the EPA's current mpg-e champ) and the more recent enhanced-battery version of the i3 while tying the Bolt's sibling, the 82-mile-range Spark. Except those vehicles can't reach more than 100 miles on a battery charge before expiring.

Using our Bolt's wall measurement and Real MPG-efficiency, we computed a range that's exactly 238 miles—spot on with EPA's claim (the Tesla crunches out at 194, short of the EPA's 210 miles). Moreover, when we retested the Chevy in its more efficient Low mode (which the EPA hasn't tested, or at least revealed), thanks to stronger regenerative braking, the Bolt's combined energy use drops to 27.8 kW-hrs/100 miles, pointing to a range of 245 miles.

To put this in historical perspective, the Chevrolet Bolt EV achieves quadruple the range of the seminal GM EV1 while accommodating five people, not two, and being quicker to dash to 60 mph by about 1.7 seconds. All for \$30,000 after incentives.

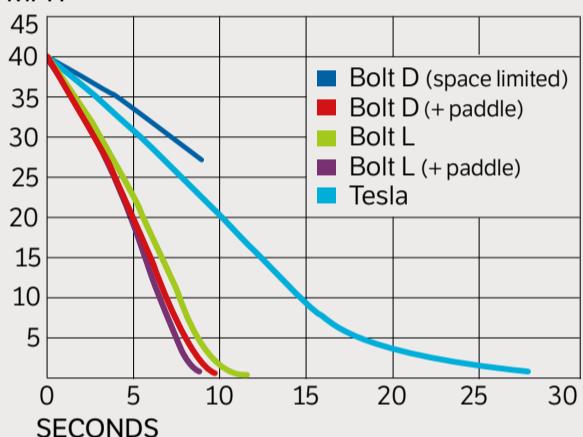
Ultimately, our guess is that most Bolt EV drivers are going to gravitate toward moving that shift lever to Low. Not only is there the additional energy-savings cake-frosting, but the convenience of driving with just one pedal is also simply addictive.



CAUTIONARY ORANGE Unlike the Tesla, GM has placed the Bolt's powertrain up front.

What does one-foot driving look like? Here are five curves comparing the deceleration of the Tesla and Bolt in different modes, as I simply lifted my right foot off the accelerator. See how easily the Chevy could draw to a non-brake-pedal stop in L (or using its steering wheel paddles)?

One-Foot Driving



But the Bolt's Tesla-like range also brings us to the doorstep of its prickliest question: long-distance travel. Although GM portrays the Bolt as a second-car EV without range anxiety (true, true), that very attribute will tempt any owner to staring at PlugShare.com to scheme a route from, say, L.A. to San Francisco. And that, my optimistic friends, is going to be a whole different conversation when compared to the wonders of Tesla Supercharger hopping.

During the Bolt's stay with us, I ran it across the street to a 50-kW Level 3 EVgo station to recharge for somebody who needed it quickly. I have visited umpteen elegant Tesla Supercharger complexes around the country. They usually consist of eight or more shiny 120-kW stalls where you just plug in. There's no fussing with swiping cards or typing codes. It's as simple as using a gas pump. But it only works with Teslas. The contraption that confronted me and my Bolt looked like a 1950s sci-fi robot with two rubber arms and two different plastic hands. The left one is for users of the clunky SAE CSS plug (chosen for the Bolt), the other a different hardware protocol for the equally clunky CHAdeMO plug (used by the Leaf and Soul EV). And the CHAdeMO one was already fastened to an unkempt Leaf occupied by a friendly but agitated lady and her bored-out-of-his-gourd

teen son who had his sweatshirt over his head. Here's the problem: The EVgo charger can only charge one car at a time, so as I waited (about 30 minutes), I discussed all manner of topics with my chatty new pal. When she finished with a cheery "bye bye!" I got the robot's other arm plugged in—and then slumped, realizing the implications of its lower-power charging rate, less than half that of a Supercharger. Soon bored out of my gourd, too, but without a handy sweatshirt, I walked down the street to a coffee shop to chill. When I came back, I found the charger had stopped after I'd left. All told, it took two and a half hours for a full charge.

Would most owners put up with any of this? Likely not. The worry is that lots of well-meaning folks who have been watching the Tesla phenomenon are going to see the Bolt's 238-mile number and think, "Hey, I'm going to travel like a Tesla can." But until the charging infrastructure matches Tesla's, you can't. That could spell disillusionment for people experiencing the first affordable EV that's truly great.

Fortunately, this sorry state of affairs has the full attention of charging-infrastructure builder ChargePoint. During a recent conversation, I reiterated my underwhelming experience as a case in point, to which they quietly replied, "We know, we know ..." On top of its 100-unit-strong fast-charging corridors up and down the coasts (via a partnership with VW and BMW), they'll soon be announcing a series of advancements, including raising their voltage from 350 to 400 volts, a jump to 800 volts when next-generation batteries appear, and even gas-stationlike multicharger plazas, a la Tesla's prescient Supercharger network. That's good news. The mainstream automakers will argue with charts and graphs that the everyday need for such an infrastructure is teensy. But the financial implications of its absence is that you'll need to buy and insure a second car for travel. That is aching evidence for Tesla's contention that the only successful vision can belong to an end-to-end EV maker that's all in—from single-purpose manufacturing to user-friendly proprietary showrooms to a bespoke fast-charging network. GM may have built a great EV with the Bolt, but only Tesla truly understands the magnitude of the mission. KR ■

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FIRST TEST | 2017 Lincoln Continental





THE LEGEND RETURNS

LINCOLN'S CONTINENTAL
SEEKS TO PROVE ITSELF
WORTHY OF ITS STORIED
NAMEPLATE

Words Christian Seabaugh
Photographs William Walker



With the 2017 Continental, Lincoln is taking luxury seriously again.



At the Ford Motor Company, three legendary nameplates are treated with a hallowed reverence and respect:

Ford F-150, Ford Mustang, and Lincoln Continental. The two Fords have been carrying the Blue Oval banner continuously since 1948 and 1965, respectively. But the Lincoln has seen better days, going from a mid-century modern luxury icon in the swinging '60s to a mistreated rental-lot special by the time it went out of production in 2002. Lincoln went cold turkey on Continental—and on any

true flagship—for the subsequent 15 years. With the new 2017 Continental, though, Lincoln is taking the luxury game seriously once again.

Truth is, Lincolns have been passionless for nearly a half-century—lazy in styling and execution, little more than

gussied-up Fords. By all accounts the same story could have repeated itself with the new Continental. Numerous engineers said that when work began on what would become the new Continental, most thought they were building the second-gen MKS. Cautious conservatism reigned. As an indirect result, no one was happy with the initial product plan. Early concepts performed poorly in focus groups, both internally and with prospective buyers. Then one Friday afternoon, Jim Farley, the then-head of Lincoln, gathered the team and laid down the law: “Guys, you’re making the next Lincoln Continental here!” With a renewed sense of purpose and full backing from the executive suite, the 10th-generation Continental team got back to work.

This Lincoln was like none other in a long time. Standards that were good enough for Ford Division products were no longer good enough for Lincoln. Money suddenly wasn’t an issue. If the team needed something, they got it. No expense was seemingly spared in the attempt to make the 2017 Continental



a true luxury flagship. The effort shows. Realizing that it doesn’t have the performance-luxury cred of BMW or Mercedes-Benz, Lincoln opted to go for what it calls “quiet luxury.” The Continental is supposed to be subtle and understated, not flashy, a quiet cool that doesn’t blend in but also doesn’t draw unnecessary attention.

The Continental is a heavy car, for sure, a 3.0-liter AWD model tipping our scales at 4,550 pounds. Lincoln executives admit the Continental is not meant to be



a drag-strip special, but its performance is more than suitable for the segment.

A Mustang-sourced 3.7-liter V-6 making 305 hp and 280 lb-ft of torque comes standard. Two twin-turbo V-6s are optional: a 2.7-liter unit producing 335 hp and 380 lb-ft of torque and a Lincoln-exclusive 3.0-liter engine making 400 hp and 400 lb-ft of torque. Lincoln expects the 2.7-liter engine to be the most popular engine of the three. Each engine is paired with a six-speed automatic transmission. Front-wheel drive is standard on the 3.7-liter and 2.7-liter V-6s, with front-biased all-wheel drive as an option, and the 3.0-liter V-6 comes standard with its own torque-vectoring all-wheel-drive system, which is capable of sending nearly 100 percent of the engine's power to any one wheel.

Although quiet luxury was Farley's mandate, our test car, a loaded Continental with the 3.0-liter twin-turbo engine and all-wheel drive, showed itself to be more than capable of launching off the line with authority. Stomp on the throttle, and the Lincoln squats on its hindquarters and roars forward, running 0–60 in 5.4 seconds and finishing the quarter mile in 13.8 seconds at 101.3 mph. The 3.0-liter V-6 is a sweetheart; it's quiet around town and makes a mean howl at full shout. Its 400 lb-ft of torque is available low in the powerband, so it's always ready to snake through a gap in traffic. The Continental's six-speed shifts quickly



enough and doesn't hunt for gears. But the gearbox could use an extra cog or three, as fuel economy is pretty abysmal. (A nine-speed co-developed with GM will be added within a few years.) That said, the six-speed gets bonus points for rev-matching downshifts in Sport mode.

For its size and heft, the Continental handles pretty well, never feeling heavy on back roads. Steering is light and well-weighted with good feedback (if not actual feel) from the road. Effort firms up in Sport mode, and the torque-vectoring all-wheel drive shuffles power more aggressively through twisty back roads. The torque-vectoring hardware helps get through the figure eight in 26.7 seconds at 0.68 g average. Rolling on 20-inch wheels (19s are standard) and with an electronically adjustable suspension, the Lincoln rides well. In its default setting, the ride is properly damped, not floaty like Town Cars of yesteryear.

Open the electronically actuated doors and slip inside—this is where Lincoln spent most of its time and dimes. The top-level Black Label package buys genuinely luxurious materials—far better than anything Lincoln has put in its cars in at least two decades. Thick, soft Venetian leather is everywhere, set off by metalized accents and gorgeous real wood trim on the dash, doors, and center console. The wood on the center console is impressive, as the wood grains and burls of the Chalet and Thoroughbred themes line up perfectly from console to the lightly damped storage cubby and cupholder cover lids.

All of the cabin's touch points are high-quality, with Lincoln creating its own switchgear with knurled-metal control knobs on the steering wheel and AC system and unique turn-signal stalks for the Continental. Just about the only Ford-style switchgear were the headlight



EXECUTIVE SUITE The \$4,300 rear-seat package includes heated and cooled power-reclining seats with massage functions, among other goodies.

FIRST TEST | 2017 Lincoln Continental



QUIET LUXURY Think of the Continental more as a New York City air of confident luxury than a showy L.A. sensibility.

switch, window switches, and the overhead storage binnacle. And unlike some competitors, quality doesn't dip where they don't think you'll look.

The Black Label package comes in three color themes: Thoroughbred, a black-and-brown motif; Chalet, which features white quilted leather; and Rhapsody, a late-availability blue color that matches the Continental Concept.

Optioned one rung down is the Reserve trim, expected to be the volume trim level, which has cloth replacing the Alcantara headliner and a dialing back of the gorgeous interior themes. But the overall quality of the cabin appears

to remain. Looks like the stylists took Farley's pep talk to heart.

Pricing starts at \$45,485 for a base front-drive Continental with the 3.7-liter engine and Premier trim level leatherette seats. Another \$2,995 buys the Select trim level, with real leather and a handful of other features. The Reserve trim package starts at \$54,840, adding the 2.7-liter V-6 and opening up the option sheet to include just about every available feature. The Black Label starts at \$63,840 in front-drive with the 2.7-liter engine. The 3.0-equipped Continental Reserve we tested stickered for \$70,900, and our fully loaded 3.0-liter-equipped Black Label photo car stickered for \$78,510.

The Continental's pricing is ambitious, considering the brand hasn't earned that sort of respect from luxury buyers. This is serious Mercedes and Lexus territory, and Lincoln hasn't been in the elite-brand conversation for years. Even so, the Continental's pricing puts it in line with the Cadillac CT6 and Genesis G90, two other fledgling flagships.

On its own merits, the new 2017 Lincoln Continental appears to be a solid luxury player. But Lincoln has its branding and conquest work cut out for it as it seeks to sell its quiet luxury theme. Although the passion for the Continental name shines through on this new Lincoln, subsequent products will be the true test of Ford's commitment to the Lincoln brand. In the meantime, though, it's nice to have the legendary Continental badge back on a car worthy of the name. ■

2017 Lincoln Continental (3.0L AWD)

BASE PRICE	\$60,105
PRICE AS TESTED	\$70,900
VEHICLE LAYOUT	Front-engine, AWD, 5-pass, 4-door sedan
ENGINE	3.0L/400-hp/400-lb-ft twin-turbo DOHC 24-valve V-6
TRANSMISSION	6-speed automatic
CURB WEIGHT (F/R DIST)	4,550 lb (59/41%)
WHEELBASE	117.9 in
L X W X H	201.4 x 75.3 x 58.5 in
0-60 MPH	5.4 sec
QUARTER MILE	13.8 sec @ 101.3 mph
BRAKING, 60-0 MPH	120 ft
LATERAL ACCELERATION	0.83 g (avg)
MT FIGURE EIGHT	26.7 sec @ 0.68 g (avg)
EPA CITY/HWY/COMB FUEL ECON	16/24/19 mpg
ENERGY CONS, CITY/HWY	211/140 kW-hrs/100 miles
CO2 EMISSIONS, COMB	1.03 lb/mile

FIRST TEST 2017 LINCOLN MKZ 3.0T AWD

THE SMOOTH SLEEPER

UNASSUMING SEDAN BOLTS OUT OF THE GATE WITH 400 HP

Be careful with that ironic eye-roll toward the 2017 Lincoln MKZ. There might be a beast lurking under that sedate exterior.

Refreshed for 2017, the MKZ received a major engine upgrade, a new line-topping 3.0-liter twin-turbo V-6 with 400 hp and 400 lb-ft of torque with all-wheel drive and 350 hp for front-drive versions. The Lincoln-exclusive engine is a welcome addition—strong, refined, and with a fierce bellow at full throttle. That said, launching our test car required some finesse. Simply mashing the gas will overwhelm the tires. Get it right, and it'll run to 60 mph in just 5.2 seconds and hit the quarter mile in 13.7 seconds. It could be quicker if it were a tad lighter, tipping the scales at 4,293 pounds. A new transmission would help, too—the MKZ's six-speed automatic shifts slower than Infiniti's and Audi's seven-speed units, even in Sport mode.

Our test vehicle came with the Driver's package, which hints at sporty handling, but its lack of cornering prowess was quickly revealed. Steering feel was heavy and numb, and controlling body lean through corners is a bit of a chore. It excels on the open highway. The Lincoln has a remarkably quiet cabin, and it feels much more solid than its competitors.

In Lincoln's quest to stand out, a peppy 400-hp V-6 is a step in the right direction, rewarding drivers with a handsome and smooth-riding sedan that can surprise and keep pace with some sportier-looking cars.

Erick Ayapana



SPECS Base Price/As Tested \$43,735/\$59,740
Vehicle Layout Front-engine, AWD, 5-pass, 4-door sedan
Engines 3.0L/400-hp/400-lb-ft twin-turbo DOHC 24-valve V-6
Transmission 6-speed automatic
Curb Weight 4,293 lb (60/40%)
Wheelbase 112.2 in
L x W x H 193.9 x 73.4 x 58.1 in
0-60 MPH 5.2 sec
Quarter Mile 13.7 sec @ 102.6 mph
Braking 60-0 MPH 108 ft
Lateral Acceleration 0.94 g (avg)
MT Figure Eight 25.1 sec @ 0.76 g (avg)
EPA City/Hwy/Comb Fuel Econ 17/26/20 mpg
Energy Consumption, City/Hwy 198/130 kW-hrs/100 miles
CO2 Emissions, Comb 0.96 lb/mile



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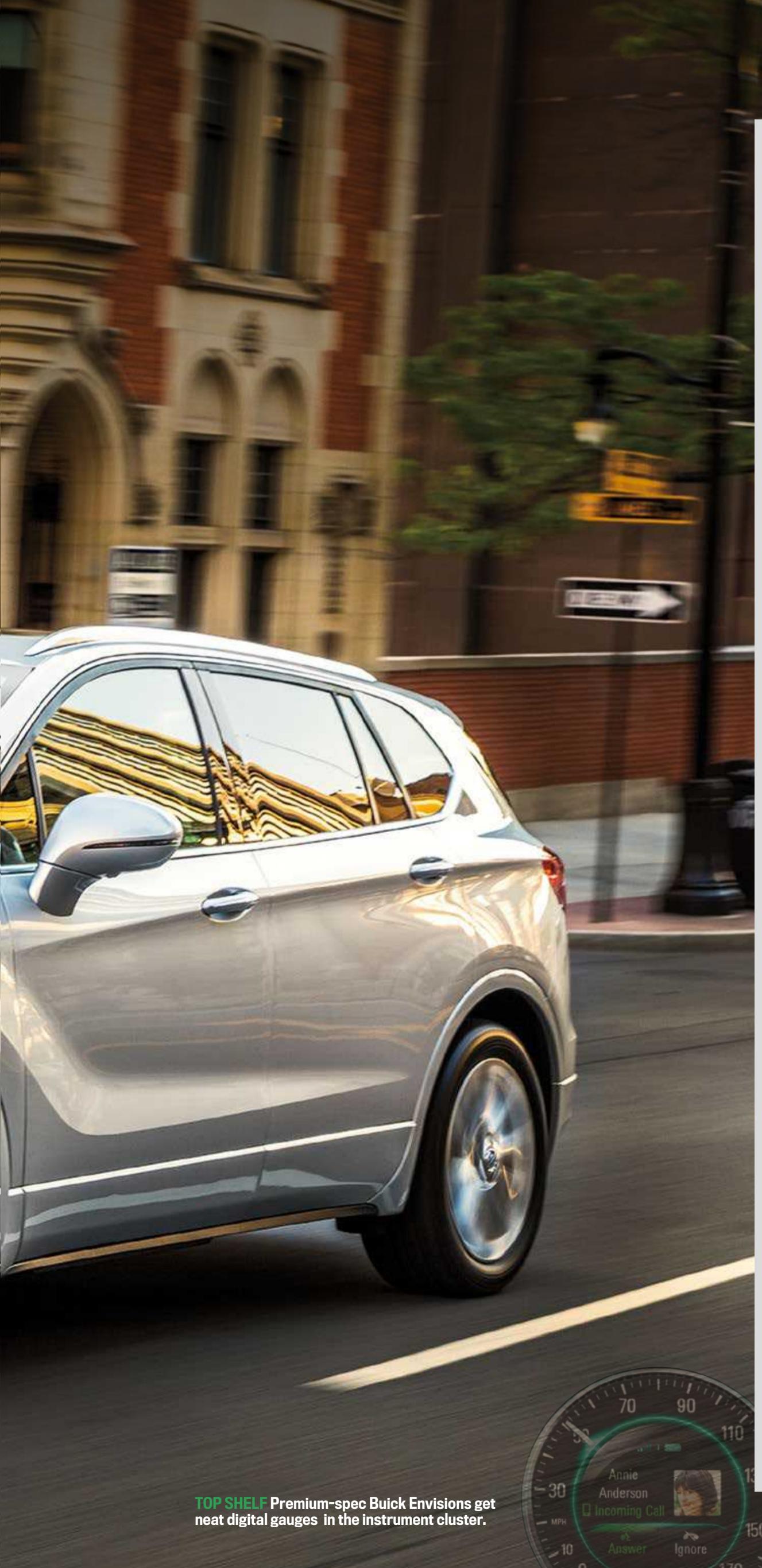
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BOUGIE* BUICK

**BIG IN THE PRC, BUICK ENVISIONS
SUCCESS FOR ITS NEW COMPACT
CROSSOVER IN THE USA.**

Words Christian Seabaugh





TOP SHELF Premium-spec Buick Envisions get neat digital gauges in the instrument cluster.



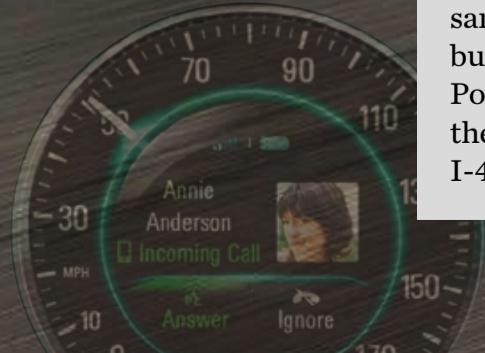
There's an inherent risk when bringing a vehicle primarily designed for a foreign market to the United States. For all this talk about globalism, there's no accounting for regional tastes. The reborn Pontiac GTO—a rebadged Aussie-spec Holden Monaro—didn't work, whereas the Volkswagen Type I Beetle—designed for pre-World War II Germany—was an unlikely success story. Although sales will ultimately measure the success of the new 2017 Buick Envision in the eyes of GM, the made-in-China Buick will have an uphill battle among consumers in an entrenched compact luxury crossover segment.

On sale in the People's Republic of China since 2014 and available in limited quantities to the U.S. last year, the new Envision represents a product development effort focused on the Chinese market, where Buick is tremendously successful. Buick will tell you the Envision was designed from the ground up as a global vehicle in the U.S. But there's no denying that the Chinese market heavily influenced the Envision's design, including features such as its big back seat and humpless floor, which are less important to American buyers who statistically don't use the back seat often.

To be fair, designing a vehicle to the tastes of your primary market is good business. Buick sold upward of 130,000 Envisions in China last year, a decent chunk of its almost 1 million in sales in the country. In the U.S., Buick sold a hair over 220,000 vehicles total. So, yeah, China is important.

Buick is not looking at a lot of conquering with this invasion, err, Envision. It expects most of its American Envision buyers to come from within the Buick brand, either downsizing from the three-row Enclave or upsizing from the Encore cute-ute.

Built on GM's new compact D2 platform, which underpins the new Chevrolet Equinox and Cruze (among others), the Envision is Buick's entrant in the profitable luxury compact segment. Benchmarked against the Audi Q5 (its primary competitor in China) and the Acura RDX (Buick's target in America), the Envision is about the same size as a Mercedes-Benz GLC but with a slightly smaller wheelbase. Power comes from one of two engines: the base 2.5-liter naturally aspirated I-4 producing 197 hp and 192 lb-ft of



FIRST DRIVE | 2017 Buick Envision

torque and an optional 2.0-liter turbocharged I-4 good for 252 hp and 260 lb-ft of torque. Both the volume 2.5-liter engine and its turbocharged counterpart are paired with a six-speed automatic. Front-wheel drive is standard on the 2.5-liter (all-wheel drive is optional), and the turbocharged engine is currently all-wheel drive only. The 2.5-liter engine is EPA-rated at 22/29/25 and 21/28/24 mpg city/highway/combined in front-wheel-drive and all-wheel-drive forms, respectively, and the 2.0-liter turbocharged engine is rated at 20/26/22 mpg.

During a day of driving the new Buick Envision around the Bay Area and Napa Valley, it isn't hard to imagine most buyers being satisfied with the 2.5-liter engine. Sampled in a front-drive midlevel Envision Essence, the engine feels torquey off the line, and the transmission shifts willingly to make the most of the limited power output. That said, with so little relative power driving the 3,700-pound crossover, the engine is often working hard to keep things moving. It feels it, too; there's a lot of noise, vibration, and harshness. The four-banger is coarse and loud on throttle and unrefined off throttle, vibrating the driver's seat.

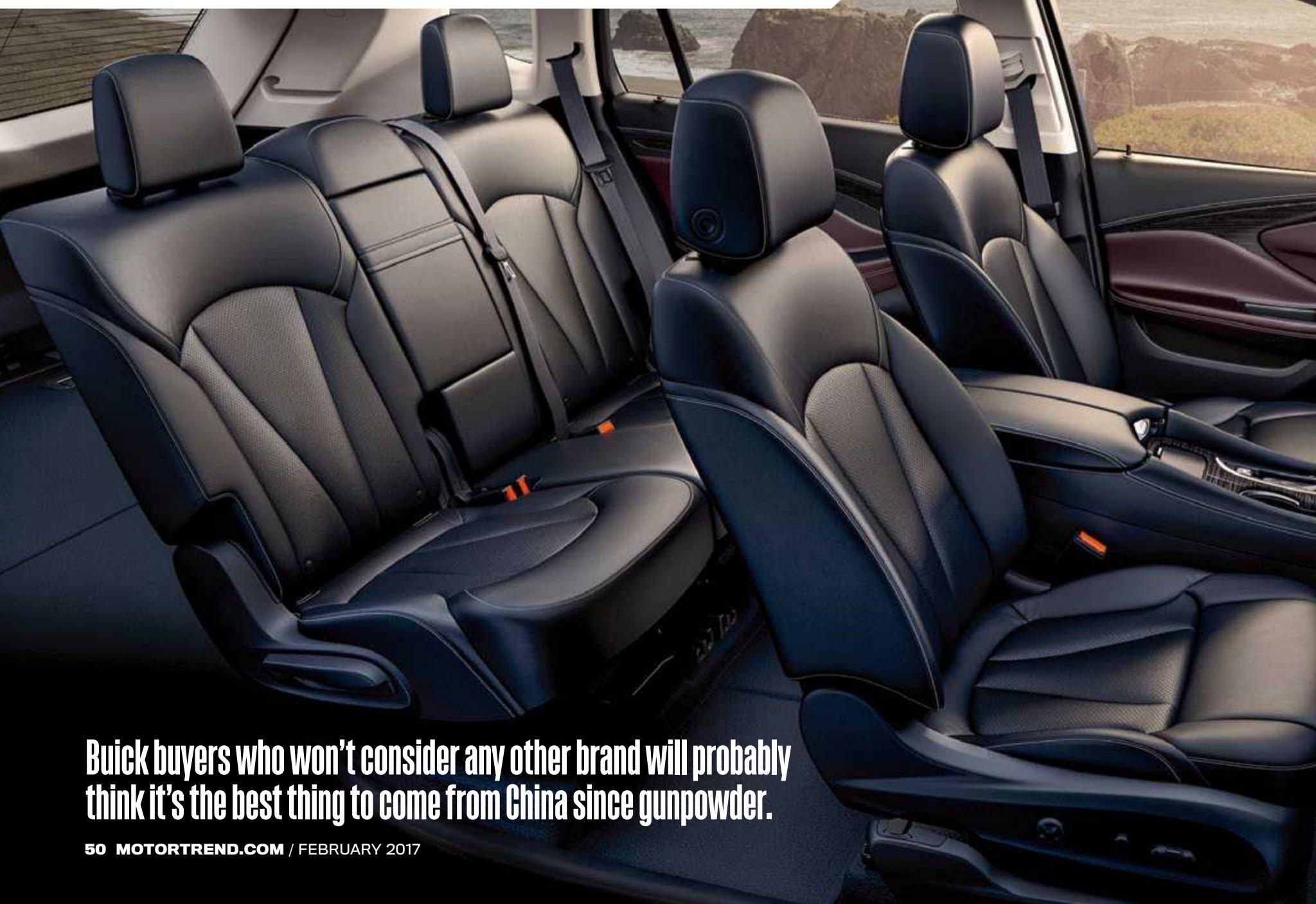


The good news is that the 2.0-liter turbo engine helps quiet things down a bit in the NVH department. It's still coarse above 2,500 rpm or so, but the turboed engine makes enough power down low that Envision drivers likely won't be spending much time exploring their tachometers. The optional engine, sampled in a loaded all-wheel-drive Envision Premium II, feels diesel-like in its torque characteristics, getting the Buick going quickly and offering plenty of passing power. As is the case with the 2.5-liter engine, Buick deserves credit for how smartly tuned the six-speed automatic is; it shifts quickly, is willing to downshift, and doesn't hunt gears.

The driving experience doesn't get much better from there. I could call out the lack of steering feedback and feel, but it's appropriately tuned for a Buick.

Again, though, there are NVH issues. For the first few miles, the suspension feels pretty softly sprung. But as you spend more time in the driver's seat, it becomes apparent that the suspension is still dealing with bumps long after you've gone over them. Its tires will float over the bump, and the suspension will iron it out, but the Buick struggles to settle down. The rest of the impact is transferred to the body, resulting in gentle head toss and gut jiggle.

What's more, the Buick isn't all that quiet, either. For all its acoustic laminated glass and active noise cancellation, there's a surprising amount of wind and tire noise inside, especially at freeway speeds. Bigger expansion joints on the freeway also revealed creaks made by the optional panoramic sunroof.



Buick buyers who won't consider any other brand will probably think it's the best thing to come from China since gunpowder.

The cabin does little to distract from the lackluster driving experience. At first glance, it seems to hit all the luxury crossover marks. It has nice leather, wood trim, a solid infotainment system, and a big back seat. That back seat is noteworthy, as it's comfortable, it aces the 6-footer-behind-6-footer test, and it folds flat with the pull of a trunk-mounted lever. The lack of a drivetrain hump, even on all-wheel-drive versions, is a packaging marvel, as well.

Look past the wrapper, though, and the Buick is pretty disappointing. Most of the materials below the armrests are grainy economy-grade plastics, the kind that makes the cringe-inducing scratching sounds as you run your fingernails along it. The same hard plastic covers the back of the front seats. Above your beltline, the materials aren't up to snuff, either. The wood trim looks stellar but is lacquered to the point that it feels like plastic. The phone-sized storage cubby on the passenger's side of the dash flexes and creaks like Styrofoam. The black plastic surrounding the infotainment screen is perplexing, too—it's surrounded by more plastic, just in a different shade of black.



BUSINESS IN BACK Not wanting to deal with hellacious traffic, Chinese executives often hire drivers and ride in the back of their cars. As such, a spacious back seat with a flat floor was a major priority for the Buick Envision.

This cost-trimming would be fine if the Envision had a price to match. With a starting price of \$34,990, that iffy interior quality doesn't look so bad compared to the BMW X1, which has similar interior quality but is far smaller. But the lightly optioned Envision Essence 2.5 FWD I tested stickered for \$41,030, and the lightly equipped top-trim Envision Premium II 2.0 AWD went for an eye-watering \$49,320. A comparably equipped Mercedes-Benz GLC300 4Matic can be had for about \$2,000 more, and Audi

2017 Buick Envision

BASE PRICE	\$34,990-\$43,245
VEHICLE LAYOUT	Front-engine, FWD/AWD, 5-pass, 4-door SUV
ENGINES	2.5L/197-hp/192-lb-ft DOHC 16-valve I-4; 2.0L/252-hp/260-lb-ft turbocharged DOHC 16-valve I-4
TRANSMISSION	6-speed automatic
CURB WEIGHT	3,750-4,100 lb (mfr)
WHEELBASE	107.9 in
L X W X H	183.7 x 72.4 x 66.8 in
0-60 MPH	8.2-9.3 sec (MT est)
EPA CITY/HWY/ COMB FUEL ECON	20-22/26-29/22-25 mpg
ENERGY CONSUMPTION, CITY/HWY	153-169/116-130 kW-hrs/100 miles
CO2 EMISSIONS, COMB	0.79-0.87 lb/mile
ON SALE IN U.S.	Currently



will sell you a similar Q5 for \$2,000 less than the latter Buick. And both offer better driving experiences, better fuel economy, and better overall quality.

In a vacuum, the Buick Envision may make sense. Buick buyers who won't consider any other brand will probably think it's the best thing to come from China since gunpowder. But in an age when luxury crossover buyers have more choices than ever, the Buick's bourgeois pretensions won't stop informed buyers from driving off with a rival's more luxurious package. What's good enough for China could be good enough for America. But the Buick Envision isn't. ■

LITTLE GUY LEADING THE CHARGE



Quick: What's Buick's best-selling vehicle? You'd be forgiven for not knowing. The automaker's best-seller last year is one of the most overlooked in the subcompact luxury CUV segment—the pint-sized Buick Encore.

The Encore was a pleasant surprise when it burst onto the scene in 2014, even earning itself an SUV of the Year finalist nod. Not one to let the grape wither on the vine, Buick released the refreshed 2017 Buick Encore this year with new sheetmetal and an upgraded engine, all while dropping its already budget-friendly price.

Based on the Opel Mokka, the Encore was a shocking success when the South Korean-built crossover came to the U.S. Much of that success can be attributed to entering a frothing subcompact crossover segment at the right time—but it would be doing the Encore a disservice to overlook its other strengths. The Buick is a compelling package with premium materials, a budget-friendly price, and exceptional packaging given its small, city-friendly size.

The Encore loses the Stay Puft exterior design in favor of crisper styling. Available in front- and all-wheel drive and with a standard six-speed automatic, the Encore now comes with one of two versions of its 1.4-liter turbo I-4: a carryover version making 138 hp and 148 lb-ft of torque and a high-performance version producing 153 hp and 177 lb-ft of torque. The optional engine is standard on the new Encore Sport Touring

trim or an \$895 option on Preferred II, Essence, and Premium trims. The 138-hp version of the engine is good for 25/33/28 mpg city/highway/combined in front-drive form and 24/30/27 mpg with all-wheel drive. The 153-hp engine, which comes with auto stop/start tech, is EPA-rated at 27/33/30 mpg with front-wheel drive and 26/31/28 mpg with all-wheel drive.

The one thing the little Buick really needed pre-refresh was a bit more power, and the new engine, sampled in our Encore Preferred II AWD tester, addresses that issue. It ain't fast, but it's certainly quicker than before, dropping 0–60 time from 9.4 seconds to what feels like high 8-second range. The Encore no longer saunters off the line from a stop but instead eagerly zips forward like a proper city car. Power is good on the freeway, too; where many little engines tend to falter, the Encore's uprated engine offers up good passing power for its size. Around town and on highway cruises, the transmission decisively shifts and makes the most of the powerband. It's actually quite a fun little package.

The Encore was out of its element on switchback-laden mountain roads, but it wasn't entirely bad. Body roll and ride quality were exceptional, and its steering rack, although a touch too light in the feel department, offered up satisfactory feedback from the road. The engine remains spunky throughout its powerband, but it feels like it's going to shake itself to pieces above 4,000 rpm, vibrating everything from the gas pedal to the seats. The Encore also needs some fine-tuning in the transmission when it's being driven hard, especially uphill; the six-speed auto tends to upshift early, bleeding off speed. Switching to manual mode helps, but if you rev higher than the car would like, it'll change your gear for you anyway. Buick has tuned the performance dial more toward comfort, but a Sport



mode would be a smart upgrade.

The 2017 redesign fixes what was maybe the Encore's biggest flaw, its button-mad center stack. The high-mounted infotainment system has moved to within arm's reach of the driver and front passenger by repositioning the air-conditioning vents. The IntelliLink infotainment system, among the most intuitive in the industry, allowed Buick's designers to clean up some clutter. With its new minimalist design, the cabin is a nice place to be. It's quiet, the seats are comfortable, and the materials are nice for the class. The back seat is livable, too, with the tall bench offering ample room for adult passengers. The rear seats even fold flat, boosting trunk space that's already generous.

The Encore is priced to move, starting at \$24,840. The cheapest Encore with the upgraded engine is the midlevel Encore Sport Touring, which goes for \$26,885 with front-wheel drive. It's so well-equipped with standard features that the average buyer is probably best served opting for the Encore Sport Touring equipped with the "big" engine and calling it a day. Only the Mazda CX-3 can rival the Encore's balance of luxury and performance at that price. With value like that, it's easy to envision the Encore continuing to lead Buick's sales charts—and perhaps bring new loyalists into the fold, too. **Christian Seabaugh**



SIMPLIFIED Pre-refresh, the Encore's dash was littered with buttons; it's much cleaner now.



SPECS **Base Price** \$24,840 **Vehicle Layout** Front-engine, FWD/AWD, 5-pass, 4-door SUV **Engines** 1.4L/138-153-hp/148-177-lb-ft* turbocharged DOHC 16-valve I-4
Transmission 6-speed automatic **Curb Weight** 3,250-3,350 lb (mfr) **Wheelbase** 100.6 in **L X W X H** 186.4 x 69.9 x 65.2 in **0-60 MPH** 8.5-9.4 sec (MT est) **EPA City/Hwy/Comb**
Fuel Econ 24-27/30-33/27-30 mpg **Energy Consumption, City/Hwy** 125-140/102-112 kW-hrs/100 miles **CO2 Emissions, Comb** 0.66-0.74 lb/mile **On sale in U.S.** Currently

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MDX

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OVERLAND



MEAN MUGGING
Those bright red tow hooks and the glare-reducing black hood decal denote this Jeep as a Trailhawk.

Words Christian Seabaugh



In 2016, we sorted out our getaway vehicles for the coming apocalypse by driving a Toyota Land Cruiser, Jeep Wrangler Rubicon, and Mercedes-Benz G550 to Moab (June). These overland vehicles are proper four-wheel-drive SUVs designed to take you to remote reaches of the globe and back in one piece. For many, the escape pod of choice is the Land Cruiser because it's big, comfortable, and incredibly capable off-road.

Unfortunately, the Toyota's \$85,420 sticker price means only the 1 Percent

will avoid the zombie invasion. As it happens, most vehicles you'd want to take on a long-distance overland expedition are pricey due to the expensive nature of their go-anywhere underpinnings or are downright uncomfortable off-road.

Well, they were, at least. For well less than 50 grand, Jeep will sell you a new 2017 Grand Cherokee Trailhawk, an overland-capable vehicle a bit more affordable to the masses. Although not new to the Grand Cherokee lineup, the 2017 Grand Cherokee Trailhawk is the first iteration to actually have earned the Trailhawk name and Trail Rated badge on its left front fender. Unlike

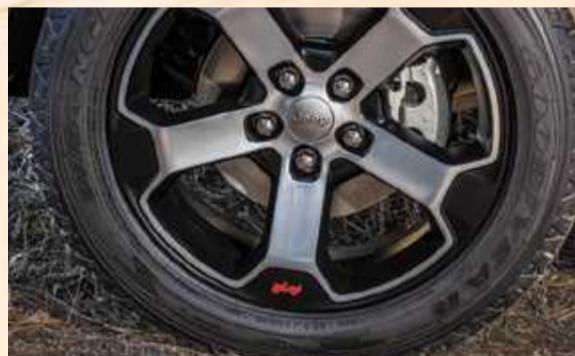
JEEP'S VERSATILE GRAND CHEROKEE GETS
THE OFF-ROAD-READY TRAILHAWK TREATMENT

ANDELR'S DREAM





GIVE ME A BREAK The Trailhawk sports the same approach, departure, and breakover angles as non-Trailhawk Grand Cherokees.



the last version of the Grand Cherokee Trailhawk (a badge-and-sticker job available in 2013), the new Grand Cherokee Trailhawk is the product of Jeep's off-road know-how, resulting in an incredibly capable off-roader at a relatively budget-friendly price of \$44,090.

The Grand Cherokee Trailhawk is well-equipped for off-road adventure; standard features include Jeep's Quadra-Drive II four-wheel drive with a two-speed transfer case, an electronic rear limited-slip differential, and a specially tuned Quadra-Lift air suspension. The air suspension, a nontraditional choice for rock crawling, was tuned for improved articulation and suspension travel compared to standard versions of the air suspension—although it doesn't improve beyond the Grand Cherokee's 29.8-degree approach (36.1 with the lower air dam removed), 27.1-degree departure, and 22.8-degree breakover angles. Ground clearance improves to 10.8 inches with the air suspension in its highest setting, thanks to 18-inch wheels wrapped in Goodyear All-Terrain Adventure tires.

Other additions to the 2017 Grand Cherokee Trailhawk include the requisite

skidplates, red tow hooks, and a black "anti-glare" hood decal. Steel rock rails aren't standard; they're an \$895 option well worth getting.

During a day of driving in the hills above Malibu, I had a chance to sample one of the Grand Cherokee Trailhawk's three engine options—the standard 3.6-liter Pentastar V-6, which makes

295 hp and 260 lb-ft of torque. Jeep also offers up its 5.7-liter Hemi V-8, which produces 360 hp and 390 lb-ft of torque, and its 3.0-liter EcoDiesel V-6, which makes 240 hp and 420 lb-ft of torque. The latter is an intriguing option for the Trailhawk, considering the diesel's torque and fuel economy should make the Grand Cherokee even more capable off-road.

Still, buyers opting for the Pentastar V-6 aren't missing out on much. The V-6 paired with an eight-speed automatic (standard on all Grand Cherokees) offers plenty of grunt on-road despite the extra rotational mass of the knobby off-road tires. Steering remains light and linear, although the tires do mask a bit of the road feel you'd get with summer or even all-season rubber. Despite the



BLACK IS THE NEW BLACK Trailhawk buyers miss out on the interior color schemes of other Grand Cherokees but do get the sport seats from the Grand Cherokee SRT.



Trailhawk-specific air suspension tuning, the Jeep rides well on pavement, making it an exceptional long-distance cruiser.

Jeep engineered this Grand Cherokee to take a beating. Off-road on a dry, dusty, rutted trail running through Malibu's hillsides, the Grand Cherokee didn't break a sweat. With four-wheel drive in four-low and the Selec-Terrain system left in Auto, the Grand Cherokee Trailhawk shrugged off any steep hills and frame-twisting ruts. Many off-roaders are disdainful of air suspensions because of a perceived lack of reliability, but the Grand Cherokee Trailhawk's didn't exhibit any bad behavior; it rode incredibly well off-road and never bottomed out on more extreme obstacles, which is an issue exhibited by many air suspension-equipped off-roaders.

Our limited off-road test of the Grand Cherokee Trailhawk didn't exactly stress the new Jeep, but the vehicle did show promise off the beaten path. Yeah, serious off-roaders will want mechanical locking diffs front and rear, among other things, but for a little more than a Wrangler Rubicon (and a bit more than half the price of a Land Cruiser), the Grand Cherokee Trailhawk offers up some serious off-road potential and on-road comfort at an attractive price. ■

2017 Jeep Grand Cherokee Trailhawk 4x4

BASE PRICE	\$44,090
VEHICLE LAYOUT	Front-engine, 4WD, 5-pass, 4-door SUV
ENGINES	3.6L/295-hp/260-lb-ft DOHC 24-valve V-6; 5.7L/360-hp/390-lb-ft OHV 16-valve V-8; 3.0L/240-hp/420-lb-ft turbodiesel DOHC 24-valve V-6
TRANSMISSION	8-speed automatic
CURB WEIGHT	4,900-5,300 lb (mfr)
WHEELBASE	114.8 in
L X W X H	189.8 x 76.5 x 69.3 in
0-60 MPH	6.6-7.8 sec (MT est)
EPA CITY/HWY/COMB FUEL ECON	14-21/22-28/17-24 mpg
ENERGY CONSUMPTION, CITY/HWY	160-241/120-153 kW-hrs/100 miles
CO2 EMISSIONS, COMB	0.94-1.16 lb/mile
ON SALE IN U.S.	Currently

5 THINGS TO KNOW ABOUT THE 2017 JEEP GRAND CHEROKEE SUMMIT

I've always thought of the Jeep Grand Cherokee as America's Range Rover. Yeah, yeah, base-spec models can get pretty chintzy inside, but the higher-end Grand Cherokee Overland models were downright ritzy. But not ritzy enough, apparently. Jeep bigwigs and dealers found its buyers actually wanted to spend even more money on a Grand Cherokee, so enter the new 2017 Jeep Grand Cherokee Summit. Here's the quick and dirty on what you need to know about the uber-luxo Jeep.

Luxury Done Right

The interior is the most important part of any luxury vehicle, and Jeep's done the Grand Cherokee Summit right. Just about every surface in the Grand Cherokee Summit's interior is covered in high-quality Nappa leather. Buyers can go further with the optional \$4,995 Signature Leather-Wrapped Interior package. It adds gorgeous quilted leather to the door panels and seats, and it wraps both the dashboard and center console in thick, soft leather.

The Summit also gets a suede headliner, acoustic glass on every window but the tailgate, soft carpets, and a 19-speaker, three-subwoofer Harman Kardon audio system.

Nose Job

Like much of the target clientele, the Jeep Grand Cherokee Summit gets a little nose job, too. (Sorry, couldn't resist.) The unique front fascia sports a new lower chin and revised Jeep grille. Sharp-looking 20-inch web-spoke wheels are standard and wrapped in sport-oriented all-season tires.

Plenty Of Options Under The Hood

Car shoppers love choices when it comes to powertrains, and the Grand Cherokee Summit offers up three stellar engines under the hood. FCA's Pentastar 3.6-liter V-6 comes standard. Revised for the 2017 model year to make more torque down low, the V-6 is good for 295 hp and 260 lb-ft of torque and returns 18/25/21 mpg city/highway/combined on the EPA cycle when equipped with four-wheel drive.

Jeep offers two optional engines on the Summit. For \$3,795 the beastly 5.7-liter Hemi V-8 is available. It produces 360 ponies and 390 lb-ft of torque while returning an appropriate 14/22/17 mpg. For \$5,000, buyers can opt for the 3.0-liter EcoDiesel V-6, which makes 240 hp and 420 lb-ft of torque while netting 21/28/24 mpg.

Although all three engines are solid, I'd opt for the Hemi



in this Grand Cherokee spec. A big, burly V-8 with enough power on tap to easily put the proletariat behind you on the road is more fitting of the character of the Summit.

Riding On Air

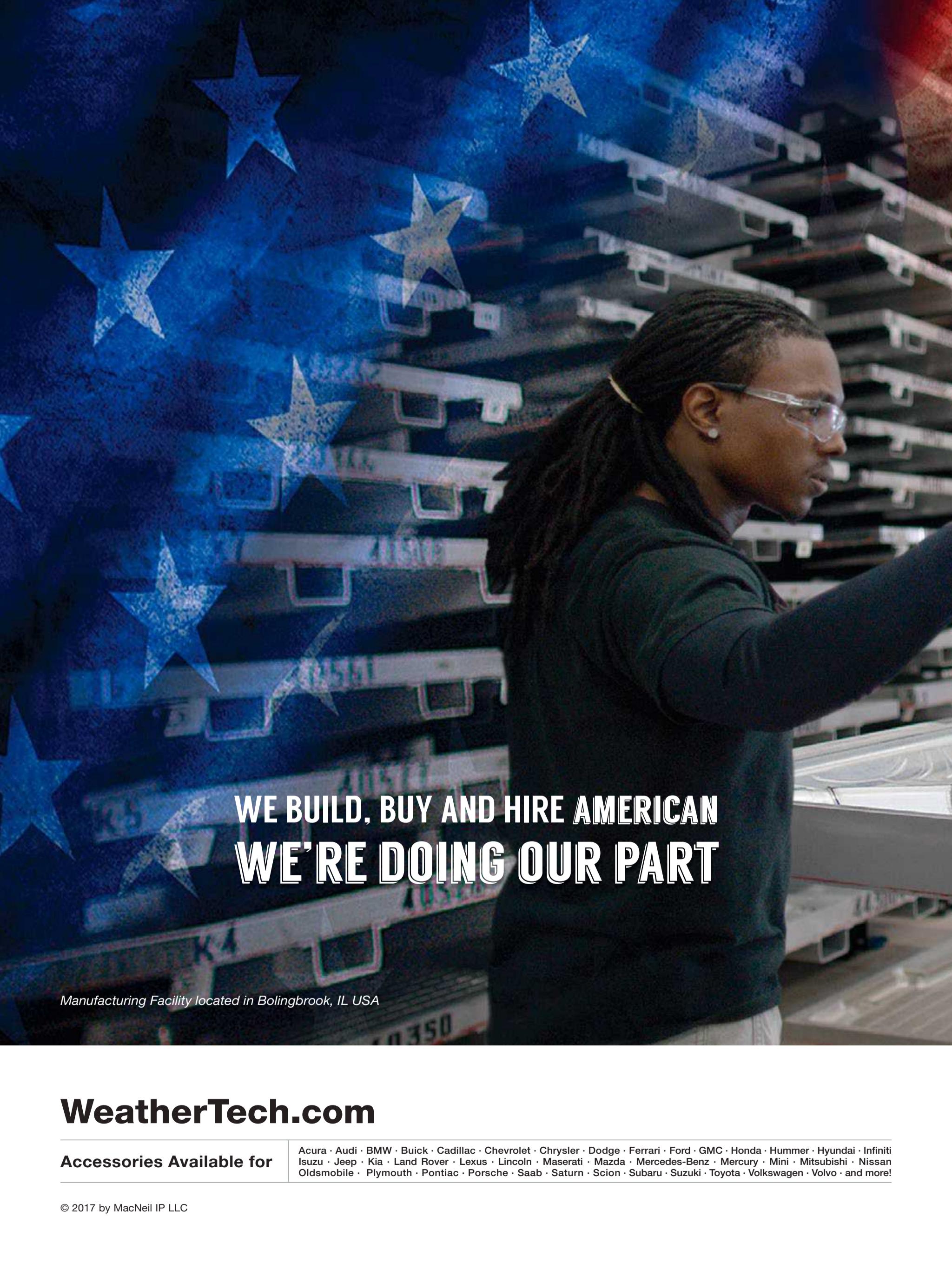
Prices start at \$51,490 for the Grand Cherokee Summit. In addition to the fancy new toys on the Summit, you also get a height-adjustable air-suspension, heated and cooled seats, Jeep's full suite of active safety hardware and software, and a panoramic sunroof. A fully loaded Grand Cherokee Summit equipped with four-wheel drive and the EcoDiesel engine tops out just under \$69,000.

Coming Soon

For those for whom even this level of luxury is insufficient, the coming Jeep Grand Wagoneer is expected to pick up where the Grand Cherokee Summit leaves off. Likely to be slightly bigger than the Grand Cherokee and packing three rows, the Grand Wagoneer will be a full-on rival to the Range Rover and Porsche Cayenne, with prices likely reaching into six figures.

Christian Seabaugh





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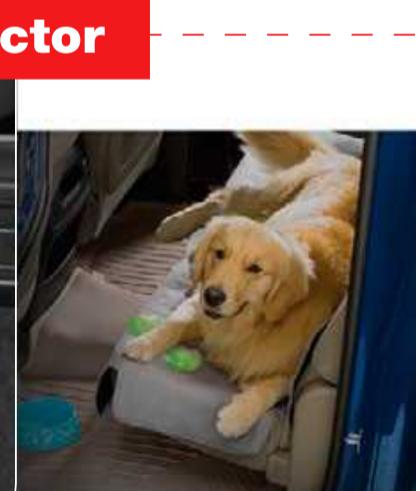
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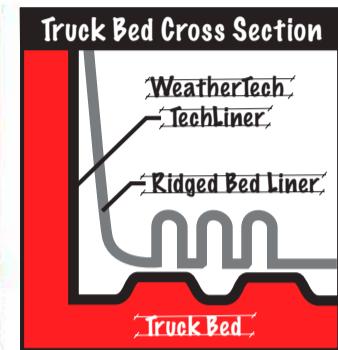
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We at **Motor Trend** believe wagons are the optimal vehicle design—the best combination of ride quality, handling, fuel economy, performance, passenger space, and cargo capacity. Despite the logic, wagons have played second fiddle to SUVs, many riding on the same platform but packaged less efficiently. Our hopes have piqued, though, as automakers have cautiously re-embraced the wagon. For the first time in a while, we gleefully bring you reviews of four all-new wagons arriving at once.

WAGONS, HO!

Words Scott Evans, Angus MacKenzie, and Kelly Pleskot

2017 Audi A4 Allroad MATCHING RUGGEDNESS WITH REFINEMENT



Normally, we'd take the time to lament the failure of wagons to gain acceptance in the U.S., but with several new ones coming to the market, mainstays such as the Audi A4 Allroad suddenly have more company. Good: more conversation about wagons. Bad: more work for Audi to do to keep its place.

We were fond of our long-term 2013 Audi Allroad, so we expected good things for its successor. The redesigned Allroad borrows the 2.0-liter TFSI engine from the revamped A4 sedan to gain 32 hp from the last Allroad. It's also the first

Audi to receive Quattro with Ultra technology, an electronic multiplate clutch and a decoupling rear-axle differential that help the drivetrain attain fully variable torque distribution. Each time you start the car, the system is building a profile of your driving habits and choosing whether to drive with all four wheels or switch to front-wheel drive. Thus the new Allroad is more efficient, rated at 23/28 mpg city/highway, up from the last generation's 21/28 mpg.

The new Allroad adds about 15 percent more cargo capacity with the back seats folded and gets slightly more rear-seat



legroom, a new seven-speed dual-clutch transmission, an improved infotainment display, and a full-color head-up display.

Audi wanted to prove the Allroad's chops both on- and off-road, so they threw us onto the wet, snowy, and muddy roads



EYE ON THE PRIZE The Audi A4 Allroad's cabin is clean and unembellished so as not to draw the eyes away from the main focus: technology.



of Jackson Hole, Wyoming. After a day of driving, it was difficult to find much fault, although its ground clearance is down 0.6 inch to 6.5 inches. It feels like a true wagon, not a crossover. What it lacks in commanding road presence and high seating position, it makes up for in carlike handling and a well-controlled ride.

Each of the five drive modes feels distinct. In Dynamic, the steering tightens up for tackling twisty roads. Both Comfort and Off-Road proved successful at traveling off the beaten path. On rocky

trails, you can hit 60 mph and not feel the bumps. On more challenging roads lined with deep mud pockets, we were just as comfortable at speeds around 30 mph. Braking felt sharp, adding to the Allroad's refined nature in unrefined settings.

The Allroad is much more fun to drive than a standard crossover on more forbidding roads, and you can fit a heckuva lot more in the cabin than fits in a standard A4. Will it be a huge sales hit? Unlikely, but perhaps it's more alluring that way.

Kelly Pleskot

2017 Audi A4 Allroad Quattro SPECS Base Price/As Tested \$44,950/\$55,575 **Vehicle Layout** Front-engine, AWD, 5-pass, 4-door wagon **Engines** 2.0L/252-hp/273-lb-ft turbocharged DOHC 16-valve I-4 **Transmission** 7-speed twin-clutch auto **Curb Weight** 3,818 lb (53/47%) **Wheelbase** 110.9 in **L X W X H** 187.0 x 72.5 x 58.8 in **0-60 MPH** 5.7 sec **Quarter Mile** 14.3 sec @ 96.9 mph **Braking 60-0 MPH** 113 ft **Lateral Acceleration** 0.82 g (avg) **MT Figure Eight** 26.8 sec @ 0.67 g (avg) **EPA City/Hwy/Comb Fuel Econ** 23/28/25 mpg **Energy Consumption, City/Hwy** 147/120 kW-hrs/100 miles **CO2 Emissions, Comb** 0.78 lb/mile



2018 Volvo V90 DOING WHAT VOLVO DOES BEST

It's not merely that Volvo has a habit of doing wagons well. Ever since the launch of the Duett in 1953, versatile Volvo wagons have consistently been cooler, more interesting vehicles than their sedan counterparts. And with the 2018 V90, which goes on sale in the U.S. in the fourth quarter of 2017, Volvo has created one of the best-looking wagons ever.

The V90 rides on the same platform as the S90 sedan. Sporting the same wheelbase and width, the V90 is 1.3 inches taller than the sedan. Intriguingly, the V90 is 1.1 inches shorter in overall length, the difference due to a more compact rear overhang. The visual differences between the two are all aft of the B-pillar: new quarter-panels, dramatically angled D-pillars, and an artfully executed greenhouse. With the same extravagant dash-to-axle ratio, taut surfacing, and crisp character lines as the sedan, the V90 exudes the same confident stance and studied elegance infused with a dash of sportiness. Clearly, this is no Brick.

The interior is spectacular, an unmistakably Swedish take on luxury without the smorgasbord of clichés. With the rear



seats upright, the V90 will swallow 19.8 cubic feet of stuff; with the seats folded flat, capacity balloons to 53.9 cubic feet. It doesn't, however, offer a third row. If you want a three-row Volvo, buy the XC90.

V90s for the U.S. market are likely to be all T6 models, which means the 2.0-liter turbo- and supercharged I-4 driving all four wheels through an eight-speed automatic. A touch of vibration at idle and a muted snarl at full throttle betray the cylinder count, but otherwise the four-banger behaves much like a six. Volvo's claimed 0-60 time of about 6.0 seconds comes thanks to 295 lb-ft of torque available from 2,200 to 5,400 rpm. Still, the V90 is 0.3 second slower than the sedan.

The V90's quiet and comfortable cabin impressed on our test loop in Spain, but after our slightly disappointing experience with the S90 stateside, we wonder how serene the aggressive 20-inch wheel/tire combination available on the top trim levels will feel here. Otherwise, the V90 has the same relaxed demeanor on the road as the S90. There's plenty of precision and grip through the turns, so it can be hustled along a winding two-lane deceptively quickly. But this big Volvo is not trying to be a sports car; its transient responses are deliberate, measured.

The V90 is a roomy, comfortable, practical, enjoyable wagon. It's Volvo doing what Volvo has long done best, just more stylishly and luxuriously so.

Angus Mackenzie

SPECS **Base Price** \$50,000 (est) **Vehicle Layout** Front-engine, FWD/AWD, 5-pass, 4-door wagon **Engines** 2.0L/251-hp/258-lb-ft turbocharged DOHC 16-valve I-4; 2.0L/316-hp/295-lb-ft turbocharged and supercharged DOHC 16-valve I-4; 2.0L/316-hp/295-lb-ft turbocharged and supercharged DOHC 16-valve I-4 plus 87-hp/177-lb-ft rear electric motor; 402 hp/472 lb-ft comb **Transmission** 8-speed automatic **Curb Weight** 4,050-4,250 lb (mfr) **Wheelbase** 115.8 in **L X W X H** 194.3 x 74.0 x 58.1 in **0-62 MPH** 5.2-7.0 sec (mfr est) **EPA City/Hwy/Comb Fuel Econ** 22-23/31-34/25-27 mpg (est) **Energy Consumption, City/Hwy** 147-153/99-109 kW-hrs/100 miles (est) **CO2 Emissions, Comb** 0.72-0.77 lb/mile (est) **On sale in U.S.** June, 2017

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2017 Mercedes-Benz E400 4Matic

THE SOUL OF THE E-CLASS LINE

If the E-Class sedan is the heart of Mercedes-Benz, the E-Class wagon is its soul. One in three E-Class models sold in Europe is a wagon, and it's one in two in Germany. So Mercedes' board can't just say, "Oh, let's do a wagon while we're at it." This is serious business, literally.

The new E400 wagon is quietly comfortable and elegantly functional, its

serenity of purpose underpinned by deep knowledge and engineering. The result: Mercedes continues to create the world's best wagon.

Making the 4Matic all-wheel-drive system standard was a no-brainer. Many of the E-Class wagon's most loyal American customers live in Snow Belt states. Standard air suspension with adjustable damping modes was a no-brainer, too.

We sampled loaded E400 4Matic wagons in Germany, heading northeast out of Hamburg toward the Baltic Sea, with a mixture of city, motorway, and rural driving. First impressions? This is a remarkably quiet wagon. Whether hustling down the fast lane of the autobahn at 140 mph or idling over village cobblestones at one-tenth that pace, the E400 4Matic wagon's cabin remains

impressively hushed. The acoustic performance is all the more impressive given our testers were fitted with ultra-low-profile tires. Despite the sporty rubber, the air suspension coped well with the small jitters we did find, and it soaked up the larger heaves on the back roads with aplomb.

For now, the U.S. gets only the E400 4Matic powered by a 3.0-liter twin-turbo V-6 that develops 329 hp and 354 lb-ft of torque. Driving through Daimler's new nine-speed automatic transmission, it should shave almost a full second off the old car's *Motor Trend*-tested 6.2-second 0-60 time. With the nine-speed tranny shuffling smoothly between ratios and all of its torque present and correct from 1,400 through 4,000 rpm, the E400 4Matic feels pleasantly responsive. Switching between drive modes, however, reveals the E400's sole weakness: inexplicably clumsy calibration of the steering weighting and transmission shift feel.

There's a lot to love about the new E400 wagon. In so many ways it's a worthy successor to the legendary W123 and W124 wagons, durable, high-quality, deeply capable cars that were the stealth-wealth icons of the '70s and '80s. And although a few gigabytes of steering and the transmission software fixes perhaps separate it from sublime greatness, Mercedes continues to create an aspirational icon of two-box luxury.

Angus MacKenzie



2017 Mercedes-Benz E400 4Matic SPECS **Base Price** \$60,000 (est) **Vehicle Layout** Front-engine, AWD, 5-pass, 4-door wagon **Engine** 3.0L/329-hp/354-lb-ft twin-turbo DOHC 24-valve V-6 **Transmission** 9-speed automatic **Curb Weight** 4,500 lb (mfr) **Wheelbase** 115.7 in **L X W X H** 194.2 x 72.9 x 57.8 in **0-60 MPH** 5.5 sec (MT est) **EPA City/Hwy/Comb Fuel Econ** 20/27/23 mpg (est) **Energy Consumption, City/Hwy** 169/120 kW-hrs/100 miles (est) **CO2 Emissions, Comb** 0.85 lb/mile (est) **On sale in U.S.** Spring 2017



2017 Volkswagen Golf Alltrack

WATCH OUT, SUBARU

By just looking at the brochure, we see that the new Volkswagen Golf Alltrack is basically a Golf SportWagen with all-wheel drive and an itty-bitty lift kit. It should be nothing for its primary target, the Subaru Outback, to worry about. The reality, though, is a bit different.

On a simple gravel road, the tires, stability control, and fifth-gen 4Motion all-wheel drive demonstrated impressive grip. Driving quickly, the Alltrack would understeer but regain grip reasonably soon. It was rare for the back end to come around, even with stability control off.

Out on the trails, the Alltrack felt confident and composed. Confession: We deviated from VW's prescribed route onto a side trail full of unvetted obstacles. Scrambling over loose rocks and up steep, loose, and pockmarked hills, the Alltrack was far more capable than expected. The street tires often scratched for traction but not worryingly. It only truly struggled

when we got opposite corners hovering simultaneously on moguls. The clutched all-wheel-drive system can send up to 50 percent of the power to the rear (it's normally 90/10 front-biased), but the differentials are open, so the brakes need to sort out power delivery. Automatic hill-descent control worked well.

The Alltrack didn't want for torque. SportWagens get specialized software to bump the 1.8-liter I-4's torque to 199 lb-ft. The turbo spools quickly, minimizing lag in normal driving and providing good midrange power. We expect it'll be slower than a standard SportWagen or a six-cylinder Outback but quicker than a Crosstrek or four-cylinder Outback.

On the road, the handling offers a planted feel and plenty of grip. VW's latest DSG dual-clutch transmission drives as smoothly as a traditional automatic while delivering seamless shifts.

There are some drawbacks. The Alltrack fits between the Crosstrek and Outback in size, but it's priced like an Outback. Our experience with Subaru's all-wheel-drive system suggests it would have an advantage on more extreme terrain, and the Outback has a 5.1-cubic-foot cargo-space advantage with the rear seats up and 6.8 with them down. The Subaru is also rated to tow 2,700 pounds; the Alltrack isn't designed to tow at all. On the other hand, its EPA-rated fuel economy falls right between the two Subarus. The VW will also offer a manual, something Subaru has abandoned on the Outback.

Volkswagen played this one smart. It started with the excellent Golf platform and gave it more off-road capability than you'd expect. It remains to be seen whether it'll be enough to entice fiercely loyal Subaru customers to switch or keep newcomers from joining the Pleiades brand. Just know the Alltrack is far from a marketing ploy. **Scott Evans**



2017 Volkswagen Golf Alltrack TSI 4Motion (SEL) SPECS Base Price/As Tested \$33,710/ \$35,705 **Vehicle Layout** Front-engine, AWD, 5-pass, 4-door wagon
Engine 1.8L/170-hp/199-lb-ft turbocharged DOHC 16-valve I-4 **Transmission** 6-speed twin-clutch auto. **Curb Weight** 3,482 lb (56/44%) **Wheelbase** 103.5 in
L X W X H 180.2 x 70.8 x 59.7 in **0-60 MPH** 7.4 sec **Quarter Mile** 15.7 sec @ 86.7 mph **Braking 60-0 MPH** 122 ft **Lateral Acceleration** 0.81 g (avg) **MT Figure Eight** 27.7 sec @ 0.61 g (avg) **EPA City/Hwy/Comb Fuel Econ** 22/30/25 mpg **Energy Consumption, City/Hwy** 153/112 kW-hrs/100 miles **CO2 Emissions, Comb** 0.78 lb/mile

FIRST DRIVE | 2017 Porsche Panamera



Words Angus MacKenzie



Porsche's all-new Panamera looks like the dictionary illustration of a four-door sports car. Drives like one, too, once you twirl the steering wheel-mounted Sport Chrono controller, which sharpens the powertrain and suspension responses. But the real genius of the new Panamera is that when you need it to be,

it's as smooth and quiet and comfortable as a four-door limousine. If you like an S-Class but hanker after a sports car, the 2017 Porsche Panamera elegantly blends the luxury-or-performance dichotomy. Yes, it is possible to have both.

Introduced in 2009, the original Panamera was—even if we are being kind—an oddly hunchbacked thing, a

consequence of former Porsche boss Wendelin Wiedeking's demand that his 6-foot-6 frame fit in the rear seat. The switch to VW Group's MSB platform gave Michael Mauer's design team the freedom to fix Wiedeking's vain legacy.

Compared with the old Panamera, the wheelbase has been stretched 1.1 inches to 116.1 inches, with the front axle

& HYDE

THE SPORTS CAR FOR THE LUXURY CAR DRIVER

New Air Suspension

The completely revised air suspension available on the new Panamera features three-chamber air springs with 60 percent more air volume than the previous setup. The larger-capacity air springs can lift the car 0.8 inch to clear driveways or change the aerodynamic angle of attack at speed, lowering the front axle 1.1 inches and the rear 0.8 inch.



FIRST DRIVE | Porsche Panamera

moved forward half an inch relative to the firewall. The base of the windshield has been moved back 0.8 inch, and the roofline, although 0.2 inch taller at its highest point, has been pulled 0.8 inch lower as it arcs down over the rear wheels. Overall length has increased 1.4 inches, and width is up 0.3 inch. The new Panamera is bigger all around, but its cleaner lines make it appear smaller and more rakish. Critically, 6-foot-plus adults still comfortably fit in the rear seat.

The 2017 Panamera marks the debut of three new engines, two of which are coming to the U.S.—the \$100,950 Panamera 4S powered by a 440-hp 2.9-liter V-6 and the \$147,950 Panamera Turbo powered by a 550-hp 4.0-liter V-8.

Although Porsche massaged the V-6 to deliver that power—and 405 lb-ft of torque from 1,750 to 5,500 rpm—it was developed by Audi. The V-8, which develops a stout 567 lb-ft of torque from 1,960 to 4,500 rpm, is all Porsche's work.

A two-wheel-drive Panamera S will arrive next year; for now all Panameras come with all-wheel drive, the power transmitted via a new Porsche-developed eight-speed PDK transmission. Seventh and eighth gears are very tall to improve fuel economy—the V-6 in the Panamera 4S is turning barely 1,350 rpm at 60 mph in top gear—and both the 4S and Turbo therefore hit their 180- and 190-mph top speeds in sixth. Porsche claims the Panamera 4S will sprint from 0 to 60 mph in 4.2 seconds, the Turbo taking just 3.6 seconds. Order the optional Sport package (\$6,930 on the 4S and \$5,580 on the Turbo, the difference due to the adaptive air suspension coming standard on



the Turbo), and you'll shave a couple of tenths from those times thanks to launch control. The Sport package also includes rear-wheel steering.

All the Panamera's chassis electrickery is overseen by what Porsche calls 4D Chassis Control, which analyzes the vehicle's trajectory and driver inputs in real time and orders a coordinated response from all systems to ensure optimal turn-in response, agility, and stability. The flesh-and-blood human holding the steering wheel, though, remains blissfully ignorant of the torrent of data constantly streaming through the Panamera's electronic neural network. All you're aware of is how effortlessly rapid the big Porsche's progress is down the road.

We sampled a Panamera 4S and a Panamera Turbo on the launch drive

in Germany—both cars fitted with the optional Sport package and the active anti-roll system. The new air suspension (a \$2,185 stand-alone option on the 4S if you don't order the Sport package) is worth every penny, the larger-capacity three-chamber air springs helping deliver luxury-car ride quality and impressively low levels of transmitted road noise.

Remarkably smooth and responsive, its exhaust note a muted, oily snarl, the Panamera 4S' engine might just be the best V-6 in the world; it's difficult to see why you wouldn't just spec a 4S up to Turbo equipment levels—minus the V-8, of course—and "save" yourself a ton of money. But the V-8 makes its case with more bite at the top end and eerily quiet running, even while cruising, as we did on the autobahn, at 130 to 150 mph.

Remarkably smooth and responsive, the engine might be the best V-6 in the world.





NO FLAMBOYANCE With clean surfaces and simple lines, the interior ambience is luxurious minimalism.

In Sport and Sport+ modes the new Panamera drives like you'd expect a four-door Porsche to drive: buttoned-down ride, crisp throttle response, lightning-quick gearshifts, and a snap-crackle from the exhaust. The steering is accurate and well-weighted and uncorrupted by the drive through the front wheels, although the helm of the 275-pound-lighter 4S feels marginally more communicative than the Turbo's through the twisties. The real revelation, however, is how plush, quiet, and composed the big Porsche is when driven with the suspension, transmission, and engine in their default settings. Porsche engineers might be sports car guys, but they've built a genuine luxury limousine.

At high speeds, the air suspension automatically stiffens the damping and spring rates slightly, gently settling the car as if a giant hand were keeping it on the road. The anti-roll system keeps the Panamera flat through turns yet allows the air springs to absorb lumps and bumps. Sport+ passing power can be accessed at any time via a button at the center of the Sport Chrono controller on the steering wheel. Thumb it, and the Panamera growls like an angry lion, the transmission instantly dropping four, even five gears as the powertrain maps jump to their most aggressive settings. It's race car-style press to pass: Nail the gas, and you're gone. The transformation to wild-haired Mr. Hyde lasts 20 seconds—there's a helpful countdown graphic on the dash—before the Panamera becomes mild-mannered Dr. Jekyll again.

Information interchanges between driver and machine are facilitated by high-res digital displays and touch-sensitive switches, all part of the redesigned cabin. The instrument panel is dominated by a large, centrally mounted analog tachometer—this is a Porsche, after all—flanked by pair of 7.0-inch digital displays for other instruments and vehicle information.



2017 Porsche Panamera 4S & Turbo

BASE PRICE	\$100,950-\$147,950
VEHICLE LAYOUT	Front-engine, AWD, 4-pass, 4-door hatchback
ENGINES	2.9L/440-hp/405-lb/ft twin-turbo DOHC 24-valve V-6; 4.0L/550-hp/567-lb-ft twin-turbo DOHC 32-valve V-8
TRANSMISSION	8-speed twin-clutch auto
CURB WEIGHT	4,150-4,400 lb (mfr)
WHEELBASE	116.1 in
L X W X H	198.8 x 76.3 x 56.0 in
0-60 MPH	3.6-4.2 sec (mfr est)
EPA CITY/HWY/COMB FUEL ECON	Not yet tested
ON SALE IN U.S.	Currently



At the center of the dash is a 12.3-inch touchscreen, which handles all the usual infotainment chores and acts as an interface for a host of web-based apps that come with the system's Wi-Fi hot spot capability. Proximity sensors detect the approach of the user's hand, and a menu bar opens on the left side of the screen. You can swipe, touch, pinch, and zoom—it's as intuitive as an iPhone, the graphics even more beautifully rendered.

The original Porsche Panamera was a great idea with flawed execution. The 2017 Panamera fixes the flaws and updates the idea with bleeding-edge technology. It truly is a sports car when you want and a luxury car when you need it. ■



PANAMERA TECH IT REALLY IS NEW, NEW, NEW

New V-8

Porsche's new 4.0-liter twin-turbo V-8 is 21 pounds lighter than the outgoing 4.8. Compared with the Audi-designed V-6, it seems an underachiever—two more cylinders, 1.1 liters more capacity, and only 110 more horsepower—but Porsche insiders point out the engine delivers its 550 hp with just 4.3 psi of boost while the twin-turbo V-6 is cranked up to 20.3 psi. Cylinder deactivation—a first for a Porsche engine—operates from 950 to 3,500 rpm and at torque loads of up to 184 lb-ft, shutting down cylinders two, three, five, and eight and reportedly delivering up to a 30 percent improvement in fuel efficiency.

And A New Hybrid, Too

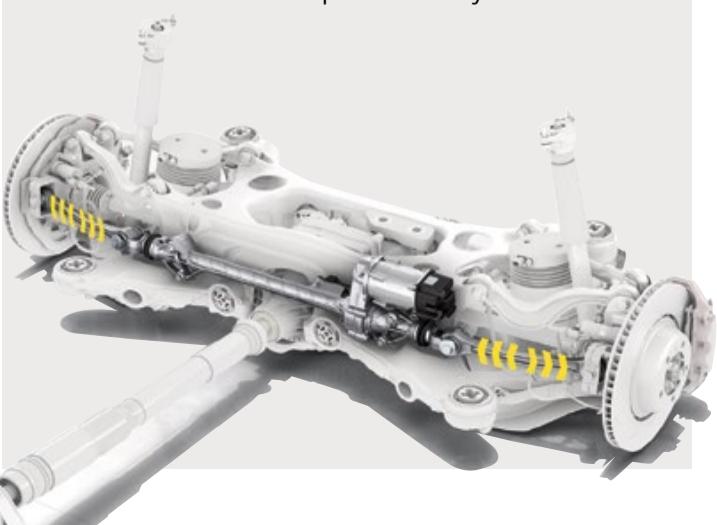
The Panamera Hybrid arrives in the U.S. in the third quarter of 2017. Its powertrain consists of a 326-hp version of the 2.9-liter V-6 engine combined with an electric motor that develops 134 hp and 295 lb-ft of torque. The total system output of 462 hp and 516 lb-ft of torque delivers 0 to 60 mph in less than 4.6 seconds and a top speed of 173 mph. Porsche claims the Panamera Hybrid will travel up to 30 miles on pure electric power at speeds of up to 87 mph. As with the 918 Spyder, the power and torque of the electric motor is available as soon as the driver touches the accelerator pedal.

New Active Anti-Roll

Panameras with air suspension can also be fitted with optional active stabilizer bars, which use 48-volt electromechanical actuators to twist them in the opposite direction to the cornering forces and virtually eliminate body roll. Tick the Porsche Dynamic Chassis Control Sport box on the options list, and you'll also get brake-generated torque vectoring and an electronically activated locking rear differential.

New Rear-Wheel Steering

Unlike the Porsche 911's rear-steer setup, which uses separate actuators to move each wheel, the Panamera's system features an electronically controlled rack mounted at the front of the rear subframe. The system steers the rear wheels in the opposite direction to the fronts to a maximum of 2.8 degrees at speeds up to 30 mph to improve agility in tight turns; at higher speeds, they turn in the same direction to improve stability.



SIXTY-FIVE

Words Christian Seabaugh
Photographs Kevin Wing

MATTERS



Large luxury cars used to be powered by throaty, grumbling eight-cylinder engines. Cadillac had its old Northstar V-8s, Mercedes-Benz a 4.3-liter V-8, and Volvo a 4.4-liter V-8 in their respective mid-priced offerings. But downsizing is all the rage these days, and all three of those manufacturers' new sedans are powered by diminutive 2.0-liter four-cylinder engines. Our testing suggests that you might not miss those extra cylinders.

The segment stalwarts are the ones leading the downsizing charge. The 2017 Mercedes-Benz E300 Sport is the German automaker's bread-and-butter mid-priced midsize sedan. Starting at around \$50K and selling well-equipped for nearly

70 large, the E-Class targets the heart of the luxury sedan market with semi-autonomous driving technology, baby S-Class luxury, and a four-cylinder engine cranking out a respectable 241 hp.

Cadillac has historically been synonymous with big engines. It sold high-tech V-16 engines through the middle of the Great Depression and has been known for its high-power V-8s since the '60s. Yet its stunning don't-call-it-a-flagship 2017 Cadillac CT6 2.0T Luxury offers an



SMALL ENGINES, BIG TECHNOLOGY
THREE NEW TAKES ON THE LUXURY SEDAN

COMPARISON | Cadillac CT6 VS. Mercedes-Benz E300 VS. Volvo S90

engine with a quarter of the cylinders of its V-16 cars, a tried-and-true 2.0-liter turbocharged I-4 making a stout 265 hp.

You can always count on the Swedes to be just a little bit different. Although the 2017 Volvo S90 T6 AWD Inscription makes just as much of a visual impression as the Caddy and Merc, it differs ever so slightly under the hood. Yes, it, too, has a 2.0-liter four-banger, but the S90's is twin-charged, featuring both a supercharger and a turbocharger. The end result is a potent little engine making 316 hp. That's V-8 territory.

There's no greater luxury than doing as little work as possible, and all three sedans in this test bring serious tech to the segment. Each one has its manufacturer's latest in semi-autonomous driving technology. And although each takes a fundamentally different approach to luxury, all come nearly loaded and comparably equipped for our \$70,000 cutoff price. Yeah, they're different sizes, but consumers don't buy size. They buy price. The winner of this four-cylinder luxury shoot-out must be great to drive and luxurious while offering impressive autonomous credentials.

THIRD PLACE 2017 CADILLAC CT6 2.0T BIG ON ENGINEERING, SHORT ON EXECUTION

Put the CT6 through one corner, and it's immediately clear where Cadillac invested its money on the new sedan: chassis engineering. The CT6's bones are phenomenal. Extensive use of aluminum gets this big car's curb weight down to just 3,893 pounds, only 2 pounds heavier than the E300, the lightest car here.

Ostensibly intended to bridge the gap between midsize and flagship luxury cars such as the E-Class and S-Class, the CT6 was designed to offer up the luxury and space of an executive bruiser like the big Merc while offering the driving experience of a midsize offering.

To the latter end, it excels; the CT6 may not have been designed to be a sports car, but it gives a fair approximation at the test track. Its 2.0-liter turbo-four seems on paper to be overmatched for the Cadillac's long, low, and wide proportions, but it's our favorite engine available in the CT6. Paired with an eight-speed automatic, the Cadillac is the second-quickest of the trio to hit 60 mph, doing so in 6.4 seconds. Its drag strip performance is equally impressive, with the Caddy rolling through the quarter mile in 14.7 seconds at 92.8 mph.

Not impressive, compared to its Nordic and Germanic competition, is the CT6's 60-0 braking performance of 117 feet. Our tester's standard all-season tires may be to blame for this and for the CT6's third-place figure-eight performance of 26.7 seconds at 0.66 g—which surprised us given how composed the Cadillac felt from behind the wheel.

However, the Cadillac's on-road manners are hit and miss. On the interstate, the CT6 is an exceptional cruiser. "There's a bit of 'good old days Cadillac' in the way it goes down the highway," associate editor Scott Evans said. The car is quiet and comfortable with an especially well-mannered ride, considering the CT6 2.0T isn't available with Cadillac's Magnetic Ride Control. The turbo engine is pretty solid, too; it's responsive and quite capable of keeping the big Cadillac going at autobahn-esque speeds. "Smooth and torquey," senior features editor Jonny Lieberman said. "It's amazing to me that 2.0-liter engines have come so far. A generation ago this is what V-8s felt like." The eight-speed transmission is mostly up to snuff, too, although it did regularly exhibit rough 1-2 shifts, especially at parking-lot speeds.

The little details could use some improvement, though. Its steering is lacking the feedback we've come to expect from Cadillac. Worse, the "safety"

cinching seat belt tries to slice the driver in two like a cheese wire every time you turn a corner with any modicum of pace. "The constant hugs from the seat belt drive me insane," technical director Frank Markus said. "I'm almost tempted to remove my seat belt." (Don't do this.)

Cadillac's radar cruise control and lane keep assist systems are stopgap measures until the brand's delayed semi-autonomous Super Cruise system arrives. Unfortunately, Cadillac has decided that CT6 2.0T buyers don't need radar cruise control; the system is only available on V-6-equipped cars. The radar cruise control system on a CT6 3.0TT we tested worked as advertised, but the stopgap's stopgap on the CT6 2.0T—a simple forward collision alert radar—is inadequate in a car of this class. The CT6 2.0T can use the front-facing collision radar to sense the distance to the car in front of it, but it isn't capable of using that information to adjust and match its speed accordingly. The CT6's lane keep assist function is also lacking; it's fine when the road is well-marked and its curves exceedingly gentle, but once it does cross a line, the system ping-pongs the car back and forth between lane markers.

Things don't get better inside. The cavernous cabin gives a good first impression but falls apart on closer examination. First, the good: The cabin is nicely designed if a bit understated. The front





WIDE LATITUDE The E300's 2.0-liter turbocharged I-4 is used in everything from the C-Class to the Metris and Sprinter work vans.



SPREAD THE WEALTH The CT6's engine can also be found under the hood of GM cars such as Chevrolet Camaro and Cadillac ATS.



LONGITUDE The Volvo's engine is the only of the three mounted longitudinally; a version of this motor powers the front-drive S90 T5.



The winner must be great to drive and luxurious and offer impressive autonomous credentials.

seats are well-bolstered, and the executive-spec back-seat package is spacious and comfortable so long as you're not sitting in the middle. The seats are also wrapped in thick leather reminiscent of a baseball glove. Sadly, it all falls apart from there. The material choices are downright perplexing with a weird mix of leather, carbon fiber, chrome, and plastics. Most frustrating are the deep-grain plastics above the beltline and hard-grain plastics that lurk below it. The switchgear

quality is maddening, too, ranging from a bespoke steering wheel to parts-bin buttons on the doors and center console.

And then there's CUE, Cadillac's infotainment system, which has somehow, impossibly, been made worse with the addition of a track pad. The finger-trace pad provides haptic feedback to the user, but it's constantly overshooting the user's intended command. You're much better off ignoring it and using CUE's touch-screen—provided it's working, of course;

it froze multiple times before eventually crapping out, taking USB connectivity and charging with it.

Also inexcusable was the difference in quality between the rear camera mirror and the backup camera. The rear camera mirror, which displays an image from a second rear-facing camera, looked like a 4K video on a flat screen—although the focal length of the lens was disorienting for some. The standard backup camera image, however, was grainy and crude.



COUNT 'EM One of our complaints about the CT6's cabin is its disjointed interior with a random mix of materials.



COMPARISON



Seeing the two displayed simultaneously is confounding. "This car is way too expensive for this nonsense," Evans said.

Ultimately, the Cadillac's refined cruising manners and roomy cabin just aren't enough to overcome the technology and quality gap between it and the top two finishers. Senior features editor Jonny Lieberman sums up our disappointment well. "I thought Cadillac moved to New York specifically to avoid crap like this," he said. "This is not good enough. Cadillac has to improve."

SECOND PLACE 2017 MERCEDES-BENZ E300 SLIM-FIT PACKAGE DELIVERS ON THE ROAD

Mercedes-Benz practically invented the midsize luxury sedan with the E-Class. With the 2017 E300, Mercedes proves it still knows how to be successful in an increasingly competitive segment. The formula for the new E-Class was simple: Shrink the S-Class design, and squeeze in the Drive Pilot semi-autonomous system. Same sausage, different lengths.

Despite being the least powerful car by 24 horsepower, the E300 hangs tough

at the test track. Mercedes' ubiquitous 2.0-liter turbocharged I-4 makes 241 hp and 273 lb-ft of torque and comes paired to a Mercedes-developed nine-speed automatic transmission. The 0–60 run takes 6.5 seconds, and the E300 needs 14.9 seconds to roll through the quarter mile at 92.4 mph. Equipped with the optional Sport package, which includes uprated front brakes and summer tires, our tester was an unsurprising performer in braking and handling tests. The Mercedes did the 60–0 test in a comparison-best 106 feet and similarly lapped the figure eight in a best time of 25.8 seconds at 0.70 g.

Although stellar at the track, the E300 left a majority of our judges wanting a little more refinement on the road. The nine-speed auto is hit and miss, quite literally; sometimes it shifts quickly and with precision, other times it clunks between gears and takes a good two-Mississippi count before shifting. "This transmission seems to get discombobulated and gave me some very hard shifts," Markus said. "Its logic wasn't terribly great, either." The E300's engine feels plenty powerful at lower speeds, but it

feels as though it runs out of steam at highway speeds while passing, likely the result of poor choice in transmission ratios. Thanks to that Sport package our E-Class came with, the Merc was pretty fun to fling around corners. But the same package hurts its ride quality and cabin noise, as it both rode worse and was louder inside than the Volvo or Cadillac.

With the addition of Drive Pilot, the new E300 is the most technologically advanced car to come out of Mercedes-Benz since the current S-Class. In fact, some Benz engineers say the E300 system is more advanced. Oversimplifying things, Drive Pilot promises Tesla levels of semi-autonomy, combining radar cruise control, self-steering via lane keep assist, and automatic lane change, among other technologies. Cruise control maintains speed well and will hook itself a few car lengths behind the car in front of it at highway speeds. Lane keep assist works most of the time on well-marked roads. However, for consumers to readily adopt semi-self-driving systems, said systems need to work all of the time, which Drive Pilot doesn't. The cruise control's radar



The image is a full-page advertisement for Harbor Freight Tools. It features a large central graphic with the text "20% OFF" in red, "VALID NOW ON 5,000+ ITEMS" in white, and "SUPER COUPON" in red. Below this, there's a "FREE" offer with a digital multimeter. The page is filled with numerous product offers, each with a yellow "WOW SUPER COUPON". Some products shown include a Pittsburgh 3-ton aluminum racing jack, a Centech non-contact infrared thermometer, a Predator generator, and a 12-volt battery charger. The background has a checkered pattern, and the overall layout is designed to look like a newspaper insert.



The Volvo XC90 blew us away, so it should be no surprise that the S90 captures the same magic.

sensor would regularly get dirty from light road grime, disabling the system. Lane keep assist frequently struggled in dealing with sun glare, and it had trouble tracking road markers as highway speeds crept higher.

Although Drive Pilot was a disappointment, the rest of the tech in the E300's cabin worked as advertised. Sporting the latest generation of Mercedes' COMAND infotainment system, the E-Class has a 12.3-inch infotainment screen on top of the center stack, with our car featuring an identical screen replacing the instrument cluster. COMAND itself has a bit of a learning curve, the driver's left and right thumbs controlling actions on each respective screen via steering wheel-mounted touchpads, but it works once you get the hang of it.

The rest of the E300's cabin is pretty inelegant compared to the other two cars. The materials, such as the leatherette seats and wood grain, are mostly convincing. But there was still more cost

cutting than we're used to seeing from Mercedes, the padded dash topper being one example. More elegant materials can be ordered on the E300, but you can't get them without exceeding our \$70,000 cutoff. And although the front seats are comfortable, there's no overlooking the tight back-seat package on the E-Class compared to the Volvo and Cadillac. As executive editor Mark Rechtin said, "not great as a table for four."

Although the Mercedes E300 makes a good case for itself behind the wheel, its tight back-seat package and inconsistent self-driving suite combined with its test-highest \$70,025 sticker price relegate it to second place.

FIRST PLACE 2017 VOLVO S90 T6 AWD INSCRIPTION NORDIC STYLING AND ELEGANCE MEET SHARP TECH

The Volvo XC90 blew us away in last year's SUV of the Year testing, so it should be no surprise that the S90 T6

AWD Inscription captures the same magic as the high-riding SUV. Riding on the same platform and sporting the same powertrains as the XC90, the S90 is a lighter, faster, and equally luxurious version of our 2016 SUV of the Year.

The goodness starts under the hood, where the Volvo should serve as the prime example for why luxury sedans don't need six- or eight-cylinder engines. Powered by a 2.0-liter I-4 that's both supercharged for low-end grunt and turbocharged for high-rpm power, the S90 makes 316 hp and 295 lb-ft of torque running to all four wheels via an eight-speed automatic. The powertrain is good for a 5.6-second run to 60 mph and a 14.1-second quarter mile time at 98.9 mph. The S90's braking and handling performance splits the difference between the CT6 and E300, stopping from 60 mph in 107 feet and lapping the figure eight in 26.3 seconds at 0.68 g.

On the road, the S90 is a sweetheart. "Excellent power delivery from this



twin-charged engine,” Evans said. “It’s not wanting for power.” The Volvo’s engine is smooth, powerful, and refined—everything a luxury buyer could ask for. The S90’s eight-speed automatic doesn’t enjoy being rushed in Dynamic mode, but it shifts smoothly in normal driving. The Volvo handles well but isn’t as sporty as the other two. Its suspension, which features a Corvette-like transverse leaf spring in back, irons out most bumps rather well and minimizes roll, but the optional 20-inch wheels transmit more harshness and noise into the cabin than we’d like.

Volvo’s Pilot Assist system is easily the best of the three entrants, although it’s still lagging behind Tesla’s Autopilot benchmark in its effectiveness. Lane keep assist keeps the S90 pegged in the center of the lane through gentle highway curves, and the radar cruise control behaves as if it were a human driver. The system, like the others here, is less reliable once off a well-marked highway, but it’s still significantly more predictable than the Caddy or Merc.

The S90 really separates itself from the other two inside. The light and airy cabin is cleanly executed and beautifully designed. The ultimate expression of Scandinavian minimalism, the flagship-level interior focuses on the essentials: leather, wood, and metal. “Elegant, genuine materials everywhere you look and touch,” road test editor Chris Walton said. The cabin is roomy, too, with bad-back-friendly front bucket seats and a spacious back seat, which strikes a nice balance between the cramped Mercedes and limolike Cadillac. “They grow tall people in Sweden, so the back seat easily passes the 6-footer-behind-6-footer test,” Rechtein said. “The back seat has tons of legroom and loads of headroom.”

Volvo’s iPad-like Sensus infotainment system also deserves recognition for how many features it packs into an incredibly intuitive and responsive 9.0-inch touch-screen display.

A sticker-price comparison further elevates the Volvo’s standing, as this nearly loaded S90 undercuts the Mercedes-Benz and Cadillac by three to four grand.

For its few faults, the Volvo S90 is the Goldilocks of the three: It’s not the outright sportiest, nor is it the roomiest, but it’s properly luxurious, the best to drive, and the best at driving itself. The Volvo S90, quite simply, is 2.0-liter luxury done right. ■

THE SWEDISH THING Avoiding stereotypical German luxury, Volvo takes a cool styling approach to the S90’s interior.

POWERTRAIN/CHASSIS	2017 Cadillac CT6 2.0T (Luxury)	2017 Mercedes-Benz E300 (Sport)	2017 Volvo S90 T6 AWD Inscription
DRIVETRAIN LAYOUT	Front-engine, RWD	Front-engine, RWD	Front-engine, AWD
ENGINE TYPE	Turbocharged I-4, alum block/head	Turbocharged I-4, alum block/head	Turbo- & supercharged I-4, alum block/head
VALVETRAIN	DOHC, 4 valves/cyl	DOHC, 4 valves/cyl	DOHC, 4 valves/cyl
DISPLACEMENT	121.9 cu in/1,998 cc	121.4 cu in/1,989 cc	120.1 cu in/1,969 cc
COMPRESSION RATIO	9.5:1	9.8:1	10.3:1
POWER (SAE NET)	265 hp @ 5,500 rpm*	241 hp @ 5,500 rpm	316 hp @ 5,700 rpm
TORQUE (SAE NET)	295 lb-ft @ 3,000 rpm*	273 lb-ft @ 1,300 rpm	295 lb-ft @ 2,200 rpm
REDLINE	6,500 rpm	6,300 rpm	6,600 rpm (max engine speed 6,000 rpm)
WEIGHT TO POWER	14.7 lb/hp	16.1 lb/hp	13.1 lb/hp
TRANSMISSION	8-speed automatic	9-speed automatic	8-speed automatic
AXLE/FINAL-DRIVE RATIO	3.27:1/2.16:1	3.07:1/1.84:1	3.20:1/2.15:1
SUSPENSION, FRONT; REAR	Control arms, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar	Multilink, coil springs, adj shocks, anti-roll bar; multilink, coil springs, adj shocks, anti-roll bar	Control arms, coil springs, adj shocks, anti-roll bar; multilink, transverse leaf spring, adj shocks, anti-roll bar
STEERING RATIO	16.3:1	15.5:1	16.5:1
URNS LOCK-TO-LOCK	2.5	2.3	2.9
BRAKES, F; R	12.6-in vented disc; 12.4-in vented disc, ABS	13.5-in vented, drilled disc; 11.8-in vented, drilled disc, ABS	13.6-in vented disc; 12.6-in vented disc, ABS
WHEELS	8.5 x 19 in cast aluminum	8.0 x 18 in; 9.0 x 18 in, cast aluminum	8.5 x 20-in cast aluminum
TIRES	245/45R19 98V (M+S) Goodyear Eagle Touring	245/45R18 100Y; 275/40R18 103Y Dunlop SportMaxx RT2	255/35R20 97W Pirelli P Zero
DIMENSIONS			
WHEELBASE	122.4 in	115.7 in	115.8 in
TRACK, F/R	63.4/64.0 in	63.8/64.0 in	63.7/63.7 in
LENGTH X WIDTH X HEIGHT	204.0 x 74.0 x 57.9 in	193.8 x 72.9 x 57.8 in	195.4 x 74.0 x 56.8 in
TURNING CIRCLE	40.0 ft	38.1 ft	38.7 ft
CURB WEIGHT	3,893 lb	3,891 lb	4,148 lb
WEIGHT DIST, F/R	51/49%	53/47%	55/45%
SEATING CAPACITY	5	5	5
HEADROOM, F/R	40.1/38.0 in	41.4/38.2 in	37.4/37.8 in
LEGROOM, F/R	42.4/40.2 in	41.7/36.2 in	42.2/35.9 in
SHOULDER ROOM, F/R	58.2/56.2 in	57.8/57.1 in	57.5/55.9 in
CARGO VOLUME	15.3 cu ft	13.1 cu ft	17.7 cu ft
TEST DATA			
ACCELERATION TO MPH			
0-30	1.8 sec	2.1 sec	2.0 sec
0-40	3.1	3.3	3.0
0-50	4.6	4.7	4.1
0-60	6.4	6.5	5.6
0-70	8.4	8.7	7.3
0-80	10.8	11.1	9.3
0-90	13.7	14.1	11.7
0-100	-	-	14.5
PASSING, 45-65 MPH	3.6	3.5	2.9
QUARTER MILE	14.7 sec @ 92.8 mph	14.9 sec @ 92.4 mph	14.1 sec @ 98.9 mph
BRAKING, 60-0 MPH	117 ft	106 ft	107 ft
LATERAL ACCELERATION	0.82 g (avg)	0.90 g (avg)	0.88 g (avg)
MT FIGURE EIGHT	26.7 sec @ 0.66 g (avg)	25.8 sec @ 0.70 g (avg)	26.3 sec @ 0.68 g (avg)
TOP-GEAR REVs @ 60 MPH	1,600 rpm	1,700 rpm	1,600 rpm
CONSUMER INFO			
BASE PRICE	\$59,390	\$53,075	\$57,245
PRICE AS TESTED	\$69,010	\$70,025	\$66,105
STABILITY/TRACTION CONTROL	Yes/Yes	Yes/Yes	Yes/Yes
AIRBAGS	Dual front, front side, f/r curtain, front knee	Dual front, front side, f/r curtain, driver knee	Dual front, front side, f/r curtain, driver knee
BASIC WARRANTY	4 yrs/50,000 miles	4 yrs/50,000 miles	4 yrs/50,000 miles
POWERTRAIN WARRANTY	6 yrs/70,000 miles	4 yrs/50,000 miles	4 yrs/50,000 miles
ROADSIDE ASSISTANCE	6 yrs/70,000 miles	4 yrs/50,000 miles	4 yrs/Unlimited miles
FUEL CAPACITY	19.5 gal	17.4 gal	15.9 gal
REAL MPG, CITY/HWY/COMB	20.0/37.2/25.2 mpg	20.4/35.2/25.2 mpg	16.4/31.2/20.8 mpg
EPA CITY/HWY/COMB ECON	22/30/25 mpg	22/30/25 mpg	22/31/25 mpg
ENERGY CONS, CITY/HWY	153/112 kW-hrs/100 miles	153/112 kW-hrs/100 miles	153/109 kW-hrs/100 miles
CO2 EMISSIONS, COMB	0.78 lb/mile	0.78 lb/mile	0.77 lb/mile
RECOMMENDED FUEL	Unleaded premium	Unleaded premium	Unleaded premium

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17x7.5 Sport Edition P2



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FIRST DRIVE | 2015 Toyota Hilux AT38

V
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GOING VIKING IN ICELAND WITH AN ARCTIC TRUCKS TOYOTA HILUX

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is here



Words Christian Seabaugh
Photography William Walker



Iceland is a rough place. A snow- and glacier-covered volcanic rock located in the middle of the roiling North Atlantic, it was settled by Vikings so good at raiding, killing, and conquering that the king of Norway exiled them. The early Icelanders, like their modern-day counterparts, were tough folk. They took no nonsense; respect was everything.

Egil Skallagrimsson, a 10th-century warrior-poet, once drove an axe through the skull of a teenager after Egil felt disrespected during a game. Egil was 7 years old. Early Icelanders endured the unforgiving terrain, occasional volcanic eruption, and harsh weather and made it their home, using the island as a staging ground for the



VIKING MODE You'll want to get familiar with these switches, which control off-road features.

European discovery of North America by Leif Eriksson (sorry, Columbus).

The history lesson tells us a lot about modern Iceland. Largely rural and with more gravel roads than paved ones, Icelanders have few ways to travel around their country—especially during long winters. Iceland's location and remoteness has led to the development of a very unique type of vehicle, what locals call "super jeeps."

Originally based on surplus World War II jeeps (hence the name), super jeeps were essentially military vehicles fitted with upgraded suspensions, bigger tires, and other gear designed to help surmount Iceland's unforgiving terrain. Nowadays super jeeps are more likely to be heavily modified Ford Econolines or Toyota Hiluxes than Jeeps, and there's a pretty good reason for that.

Arctic Trucks.

This group of super-vehicle creators first entered the consciousness of international car enthusiasts when *Top Gear* presenters took a modified Hilux to the magnetic North Pole in 2007. But the company is much older than that. Arctic Trucks Chairman Emil Grimsson told us that in the late '80s, Icelanders discovered that large tires running very low air pressures significantly improved traction in snow. So they started modifying their vehicles with monster rubber.

When Grimsson began working for Toyota Iceland in 1989, he got the automaker thinking about how it could sell modified vehicles ready to tackle Iceland's terrain without hurting performance, reliability, or durability. In 1990 Arctic Trucks was born as an offshoot of the Toyota distributorship. Fifteen years later, Grimsson bought out Arctic Trucks from Toyota Iceland. Now Arctic Trucks has outposts in nine countries (plus Antarctica), has distribution deals with a handful of automakers, and modifies everything from the Mercedes-Benz Sprinter to the legendary Toyota Hilux.

Whereas Americans tend to over-prepare for poor road conditions and then never use that capability (see the 3,600 Mercedes-Benz G-Class sold last year for proof), Icelanders use the capability they purchase. All of it. With road closures due to weather common year-round, those living outside the capital may have to traverse deep snow, mud, and



even rivers in order to get to the closest town and get something as simple as a hot dog. (Icelanders LOVE hot dogs.)

Being an American in Iceland with my new(ish) wife, Elayna, we opted to celebrate our belated honeymoon by venturing beyond the south coast where most tourists spend their time. Instead, we lapped the country's ring road, breaking off onto 4x4-only F-roads to explore the real Iceland where we saw fit, just like the Vikings before us. To do so, we needed something beyond your typical rental Suzuki Jimny. We needed a modern-day wheeled longship: An Arctic Trucks Toyota Hilux AT38.

Arctic Trucks builds Hiluxes in several specs, including a 6x6 version on 44-inch tires that'd shame a Mercedes-AMG G63 6x6. The Hilux AT38—the number denotes the tire size—is among the most popular. The same spec truck that James May and Jeremy Clarkson sailed to the North Pole, the Hilux AT38 starts its life out as a stock Toyota Hilux Double Cab with four-wheel drive and a



We lapped the ring road, breaking off into 4x4-only F-roads to explore the real Iceland, like Vikings before us.

BULLETPROOF Aside from fitting it with a snorkel, Arctic Trucks leaves the Toyota Hilux's tried-and-true 3.0-liter turbodiesel I-4 stock.

3.0-liter turbodiesel I-4 producing 168 hp and 265 lb-ft of torque.

Arctic Trucks takes things from there. Although the Hilux's famously reliable powertrain is left alone, modifications are extensive; the body and frame are re-engineered and reinforced to accommodate the massive Arctic Trucks-branded 405/70R15 studded mud- and snow-rated tires, a Fox Racing coil-over suspension up front, Arctic Trucks coil springs paired with Fox Racing shocks in back, and a 3.5-inch suspension lift. With the added clearance the tires provide, the Hilux AT38 boasts 12.7 inches of ground clearance. The Arctic Trucks team then adds an ARB air-locking front differential to pair with the stock mechanical-locking rear diff (now with a 4.88 final drive ratio), a 26.5-gallon auxiliary fuel tank, a snorkel, a bull bar, front and rear tow bars, and electric air compressors, along with other small items.

Before Elayna and I set off on our journey, I wanted to find out just what the Arctic Trucks Hilux was capable of. After all, I can't imagine anything turning Elayna from new wife to first wife quicker than my getting us stuck and asking her to hop out and push. So the first day of our honeymoon would be spent off-road near Arctic Trucks HQ, figuring out



just what the Hilux AT38 could do. Yes, Elayna is a good sport.

Parked in a small underground garage, the Arctic Trucks Hilux looked huge sitting among a scattering of Škodas and stock Toyota Land Cruisers. Hoisting my 6-foot frame into the Hilux felt like I was climbing into a big rig, but once I was inside, it felt like your typical Toyota truck, with the exception of the CB radio and extra fuel gauge mounted in the center console and the four auxiliary switches—two for the ARB locker, one for the air compressor, and one for the auxiliary fuel pump. It was practically a previous-generation Tacoma.

But any indication that the Arctic Trucks Hilux drives anything like a Tacoma disappeared as I squeezed the Toyota out of the garage and into the

streets of central Reykjavik. The diesel's relaxing clatter and torque is one indication. The last Tacoma I drove spent most of its time revving its V-6 above 4,000 rpm in order to get anywhere. The Hilux's diesel, on the other hand, redlines just past 4,000 rpm, with most torque available between 1,100 and 3,500 rpm—by which time the five-speed auto usually shifts. The other indication is where the rubber meets the road, literally. The 38-inch tires' metal studs emit a constant but oddly pleasing thrum as the metal studs hit the pavement. Its aural feedback is reminiscent of an ordinary car's tires driving down a gravel road.

Out on the highway, the Hilux pulls strong as you accelerate to Iceland's 55 mph (90 km/h) national speed limit; you won't be winning any drag races with this Toyota, but it doesn't at all feel overmatched by the massive rotational inertia of the tires and the extra mass of the off-road hardware. I initially hit the road annoyed at the low speed limit, but 55 mph is probably about as fast as you'd



FIRST DRIVE | 2015 Toyota Hilux AT38



DO AS I SAY, NOT AS I DO

This is what happens when you don't air down your tires, ladies and gentlemen. It was cold out there.

want to go in Iceland in a monster Hilux. As you get up to speed, the steering wheel starts to gently wobble and shimmy in your hands as you drive down the road. It's not violent like the so-called "death wobble" some Jeep owners get after modifying their vehicles past their mechanical limits, but it certainly gets your attention at first.

Pretty soon, with an Arctic Trucks guide as escort, I had turned off the ring road and pointed our Hilux down a gravel road leading to the entrance of a massive geothermal powerplant. The road had seen better days: rutted, uneven, scarred from many harsh winters. The Hilux nevertheless floated down the trail in relative comfort. The closest analogue would be a Ford F-150 Raptor, which has a similar ability to make the roughest of roads feel pillow-soft. After a spell on some gravel roads, we turned down a spur that led onto an unplowed snow-covered trail, pulled over, and, per the insistence of our guide, Jón, aired down the tires.

I thought airing down the tires seemed like overkill. I grew up driving in New York winters and last winter spent some time in some of America's best off-roaders in snowy Colorado, and I never felt the need to air down stock rubber. So why now, given the Hilux's barrel-sized tires? Not wanting to offend my gracious guide, I nevertheless crouched down in the cold snow and watched as Jón showed me the Arctic Trucks wheels' party piece. The bead-locking wheels have two valve stems to aid in the airing-up and airing-down process. The

idea is that you use the outboard valve stem to check your tire pressure while the inboard stem, when uncapped, expels air like an untied balloon. It's a pretty ingenious system. Jón said that if you're quick enough, you can air down two tires at a time. I am not that quick, even when airing down from our 25 psi road pressure to the 10 psi off-road pressure.

With the tires deflated, I fired up the truck, slotted the Hilux's transfer case into four-high, and plowed forward into the untouched powder. I felt unstoppable—on top of the world! Visions of exploring deep into the untouched highlands or out onto the western fjords with Elayna flashed through my head. Maybe we'd even see puffins! As I snapped back to reality, I realized I wasn't going as fast anymore. The diesel was chugging along, the tires spinning, but we were sinking—fast. We were stuck. I'd made it all of 15 feet.

Iceland does not joke around.

Turns out Icelanders have the same word we do for the type of snow they get in early May: crap. With temps warming, the snow changes from an icy powder to a wet slush that doesn't compact well into a tire's tread. Getting stuck becomes a regular occurrence—a reason why many of Iceland's interior roads remain closed through mid-summer.

It's a good thing we brought a support truck. With our escort following my tracks, it made its way toward my stuck Hilux so that we could yank it free with a rope. We aired the tires down to 5 psi for good measure and shifted into four-low.

After a yank from the backup Hilux, we continued down the untraveled path. Even with the snow working against us, the Arctic Truck felt unstoppable with the Toyota in low gear and the nearly airless tires slinging snow as we made our own way. When it did get stuck, reversing, locking the rear diff, and continuing forward usually did the trick. If not, the ARB front locker often proved to be the difference maker.

Things can get dire while off-road in Iceland's interior. As we pushed on, following where we thought the road markers would be—if there were there a clear road—we found ourselves in a small valley. Covered in pure white snow, the ground would've blended right into the horizon if not for the small pockets of gray volcanic gravel and lava moss providing some contrast. Just visible on the other side was the road we needed to head back to civilization. Onward.

It was slow going, but we were making progress. Halfway through the valley, Jón yelled to stop. I brought the Hilux to a halt, and the truck started to settle down into the snow. Jón told me to slowly back up as he hopped out to investigate the trail. "Look at this!" he said. As he lightly put his foot on the snow we were about to drive over, it crumbled away, revealing a running stream about 2 feet below. Had we driven into that, we would've not only sunk fast but also likely done some damage to the Hilux. If we didn't have that backup truck, we would've been stranded. End of story. This river crossing would prove to be the toughest obstacle of the day. After backtracking through the valley, we decided on the best way around the river. The trucks would straddle the volcanic rock on the hillside, work up a head of steam, and plow through the deep snow, staying wide of where we thought the deepest part of the river was.

With the transmission in low gear and four-wheel-drive system in low, the Hilux got up to speed before running out of rock and plowing into the deep powder.



The Next Generation

MOST OF THE GLOBE got a new midsize pickup truck from Toyota in 2015. Being a country of just 332,000 and with an auto market to match, Iceland was one of the few countries where Toyota didn't launch a new model, so the seventh gen soldiered on for the 2015 model year.

The newest Hilux has begun to proliferate into Iceland, however, and Arctic Trucks has launched its first iteration of the new Toyota. Dubbed the Toyota Hilux AT35, it's aimed at a more modest duty cycle than the Hilux AT38. Still, it should be plenty capable thanks to the 1.6-inch suspension lift and 35-inch Arctic Truck-designed tires mounted on wheels engineered to support low tire pressures. The powertrain is left stock, taking advantage of the smaller and more efficient 2.4-liter turbodiesel I-4, which produces only 150 hp but puts out 295 lb-ft of torque. A newer six-speed auto replaces the five-speed slushbox.

This new Hilux is the first version of many expected to come out of the Arctic Trucks workshop.



The Arctic Truck made progress, but by the halfway point it was slow going. The road to return was so close and yet so far away; it looked to only be another 100 yards or so through the snow, but it took nearly an hour to get through. Even with the locked diffs helping out, forward progress was exceptionally difficult. I'd get the Toyota going at a decent clip only to be brought to a halt. I soon got into a routine: low gear, roll slowly on the gas, accelerate, get stuck. Reverse 15 feet. Low gear, slow on the gas. Use my tracks for traction. Pick up speed. Stop. Rinse. Repeat. Two steps forward, one back. As the time passed, the Arctic Trucks Hilux pushed and dragged itself ever closer to the safety of the trail. A sense of excitement washed over me as my bright red truck approached the last stretch of untouched snow. One final push as the

diesel roared forward, and we were back on solid ground. We'd made it.

Compared to the snowfield, the Hilux AT38 made the rest of trail look easy. That road we worked so hard to reach continued through a river—not across—which turns out to be a pretty common occurrence in Iceland. With the water no more than a foot deep, the Toyota didn't even seem to notice that it was fording a river, the only sign of our feat was the water being thrown up by the tires like the salt spray from a Viking longboat's oars. Pretty soon I could make out our paved road back to civilization. With one final push, the Hilux powered over the muddy river embankment and back onto the main road, whereupon we aired up the tires. Time to hit the road. My shield-maiden and I had a saga to write. ■

BUDDY SYSTEM
Always off-road with a buddy. Without the second Hilux support truck yanking me free, I'd have frozen on the tundra months ago.

2015 Toyota Hilux AT38	
BASE PRICE	\$99,000
VEHICLE LAYOUT	Front-engine, 4WD, 5-pass, 4-door truck
ENGINE	3.0L/168-hp/265-lb-ft turbo-diesel DOHC 16-valve I-4
TRANSMISSION	5-speed automatic
CURB WEIGHT	5,000 lb (MT est)
WHEELBASE	123.2 in
L X W X H	206.9 x 82.2 x 80.5 in
0-60 MPH	11.0 sec (MT est)
EPA CITY/HWY/COMB FUEL ECON	Not rated
ON SALE IN U.S.	When the Atlantic freezes over



GARAGE

Words Motor Trend Editors



ARRIVAL 2016 Honda Civic Touring Jason Udy



Excited to see how the new boosted @Honda Civic touring compares to my former 8,000-rpm Civic Si!
@MT_JasonUdy

EPA CITY/HWY/COMB FUEL ECON
32/42/36 MPG **BASE PRICE \$27,161**
PRICE AS TESTED \$27,996

After more than four decades and 10 generations of existence, the Honda Civic has become a default purchase for many young people or those who are young at heart. It carries a legacy of inexpensive transportation that doesn't feel cheap, and of flattering its owner with elegant driving manners and interior fitments.

The Civic has spent most of its existence near the top of the compact segment, but there have been missteps. The eighth-gen car won our 2006 Car of the Year award, but Honda lost its way with the decontented ninth-gen Civic, requiring a refresh just one year after its debut.

With the new 10th-generation 2016 Honda Civic (now classified as a midsize car), the

automaker has made amends for its past sins by building the best car in its class out of the gate.

The redesigned model gets new drivetrains. The base engine is a 2.0-liter DOHC i-VTEC I-4 (158 hp, 138 lb-ft), and higher trims feature a new 1.5-liter turbocharged DOHC I-4 (174 hp, 162 lb-ft). Depending on trim, both engines put power to the pavement by either a six-speed manual or CVT.

Our top-spec Civic Touring sedan gets the turbo engine, slightly larger stabilizer bars in front (26.5mm vs. 25.5mm) and rear (17.0mm vs. 16.5mm), and 17-inch alloy wheels. Touring models

come equipped with a power moonroof, foglights, a decklid spoiler, heated side mirrors, and remote-smart entry and alarm. Other Civic features exclusive to the Touring model include automatic LED headlights, chrome door handles, and turn indicators integrated into the side mirrors.

The Civic Touring comes with Honda's driver-assist tech, including lane keeping assist, adaptive cruise control with low-speed follow, and Honda LaneWatch. In addition to the standard active safety tech (including a rearview camera), the Civic Touring also features forward collision



Bigger at 45 years old than ever, the new Civic Touring offers lots of new tech up front and one of the biggest back seats in the class.



UPDATE
CHEVROLET
COLORADO Z71
DURAMAX

DODGE CHARGER
SRT HELLCAT

ARRIVAL
HONDA
CIVIC TOURING

HONDA
HR-V EX

UPDATE
HONDA PILOT
AWD ELITE

KIA
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SPORT HSE TD6



MAZDA MX-5
MIATA CLUB

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CX-3 AWD
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CLUBMAN ALL4

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OUTLANDER SEL

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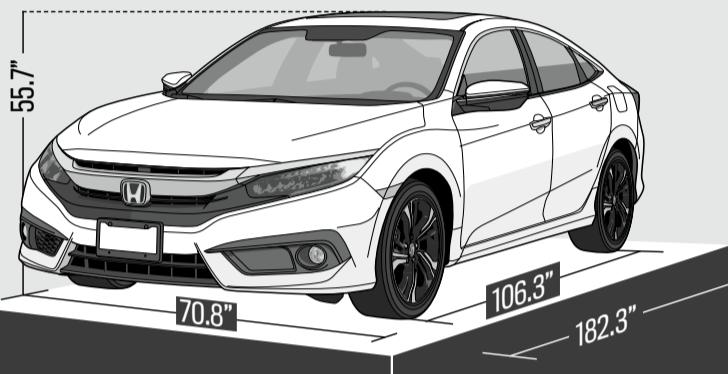
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OUTBACK 2.5i
UPDATE

VOLKSWAGEN GOLF
SPORTWAGEN 1.8T
UPDATE

VOLVO
XC90 AWD
UPDATE

RIDE ALONG FOR UPDATES ON OUR LONG-TERM FLEET

SPECS 2017 Honda Civic Touring





2016 Chevrolet Colorado Z71 Duramax Christian Seabaugh



I've heard of a "pre-owned" car but never a "pre-broken" one. There's nothing worse than a car rolling off the factory line in less than perfect shape." @C_Seabaugh

Most of the time when a consumer takes possession of a new car, everything works as designed. It's usually not until later that issues arise. Unfortunately, our long-term Colorado wasn't good to go when it was delivered to us with the traction control button working only intermittently. With fellow editor Scott Evans taking the Colorado on a road trip that would include some light off-roading, I got my butt to the dealership to get the switch fixed.

The problem with the switch was pretty simple. The toggle, located on the lower portion of the

Service life / 3 mo/8,375 mi
Avg CO₂ / 0.88 lb/mi
Energy cons / 150 kW-hrs/100 mi
Unresolved problems / None
Maintenance cost / \$164.62 (oil change, inspection, tire rotation)
Normal-wear cost / \$0
Base price / \$35,535 **As tested** / \$41,905

REAL MPG FUEL ECON 25.2 MPG comb.

center stack, had some play in it. Normally the switch is depressed to turn traction and electronic stability control off or on, but with play in the switch, traction control couldn't be reliably deactivated by pressing the button; I could only ever get it to work if I pressed the switch down *really* hard in a specific spot. It's totally not OK for a new vehicle to pass a pre-delivery inspection and be handed to the customer essentially broken.

Despite its criminally low air dam, the Chevrolet Colorado has still proven itself to be quite dependable off-road.

The fix for the switch, however, was more complex than our local Chevy dealer expected. Initially the dealer thought it would be a simple matter of taking apart the center stack and putting it back together with new switch hardware. Not so. Turns out the service department had to take apart the *entire dashboard* just to give the truck a reliably functioning switch—a fix that took the Colorado Duramax out of service for a night. The repairs were covered under warranty, of course.

With the Colorado's dash buttoned back up and the pickup finally in proper condition, I handed off the keys to Evans. A full account of his 1,200-mile road trip to the Sierra Nevada—including getting stuck in the snow—is online, but his tale concludes like this:

"My off-roading mistakes aside, the Colorado was an excellent choice for both my road trip and my afternoon of wheeling. It reaffirms my faith in our judgment in naming it Truck of the Year twice."



2016 Honda Pilot Ed Loh



Replacement @ZF_TRW 9-speed transmission in our long-term @Honda Pilot is just as sloppy/lazy as the original. Le sigh. #MTGarage. @edloh

In the last update, we provided a riveting play-by-play of diagnosing and confirming a noise problem in our Pilot's transmission—which ultimately led to it being replaced by our local Honda dealer, under warranty, at 21,428 miles. Nearly every staffer who sampled it called out the Pilot's ZF nine-speed transmission for its slow shifts, fussy reverse gear engagement, and overall lazy feel.

Would the new unit be any better? Did we get our lemon fixed up? Were crisp, energetic shifts now on tap via pedal and paddle shifter? Nope.

Service life / 12 mo/28,032 mi
Avg CO₂ / 0.90 lb/mi
Energy cons / 157 kW-hrs/100 mi
Unresolved problems / None
Maintenance cost / \$310.86 (3-oil change, inspection; 1-tire rotation, rear differential service, cabin air filter) **Normal-wear cost** / \$0
Base price / \$47,300 **As tested** / \$47,300

REAL MPG FUEL ECON 21.5 MPG comb.

I had been driving the Pilot with its new transmission for more than a week when I started hearing something else: a little voice in my head that would shout at the beginning and end of each day, "Dagnabbit, I really hate this transmission."

There is just so much slop in it, particularly if you push the button to engage the Eco Assist system. This mode does a variety of things in the name of fuel economy—including adding slack to the

throttle—which makes the whole powertrain feel even more unresponsive. A note I sent myself for this update: "Last night, leaving work, I toed down the throttle and nothing. Kept going. Still no movement. I finally just mashed the throttle to the floor (for about a half second) and lifted immediately (foot covering brake pedal). It finally lurched forward."

I find an additional jolt of slop when parking on a gentle downhill. Before shutting off the ignition, I push the park button and lift my foot off the brake, and the car lurches forward for what feels like 6 inches. The sloppiness makes me wonder who at Honda thought this was OK. This is the same company that started racing F1 in the '60s, now builds the NSX in Ohio, and currently races under the same banner as McLaren? Soichiro-san must be spitting fire from his grave. Maybe it is not some engineer's fault that the ZF-supplied transmission is so poor. Perhaps fault lies with a bean counter, but somebody thought it made sense, and it doesn't.



2016 Mazda CX-3 AWD (Grand Touring) Benson Kong



"Will the CX-3 survive surgery? All signs point to yes. It might take a while, though."

It's a phone call that every vehicle fleet overlord (that's me) dreads.

"I got into an accident. What do I do?"

Post-accident instructions drilled into our minds leap to attention. Remain calm; assess bodily injuries; don't caustically lay down blame; put down in writing what transpired as best remembered as soon as possible, including the collection of obligatory information from all parties involved. The brain has a funny habit of warping the sequence of events as time passes and as nerves frazzle.

Service life / 10 mo/27,519 mi
Avg CO₂ / 0.72 lb/mi
Energy cons / 125 kW-hrs/100 mi
Unresolved problems / Crash damage
Maintenance cost / \$252.49 (3-oil change, inspection, tire rotation)
Normal-wear cost / \$0
Base price / \$27,120 **As tested** / \$29,990

REAL MPG FUEL ECON 27.0 MPG comb.

The accident materialized near our office, so I was able to swiftly check out our wounded CX-3. Between the accounts of the apologetic driver of a third-gen Escalade and the staff associate who was driving the CX-3, the order of happenings was reconstructed. The Mazda, while coasting to a stop on approach to a red traffic light, was sucker-punched on the driver's side. The disfigurement is primarily located on the rear quarter-panel and

Thanks to the struck wheel that toed in ever so slightly, you have to counter-steer aplenty to keep the CX-3 rolling straight.

luckily not nearer the front door. The Escalade, carrying a nearly 3,000-pound advantage over the little crossover and wearing noticeable damage on its passenger front corner, apparently did not turn enough while making a left out of a driveway.

Info exchanged, there's little else to do but allow the shock to subside, drop the CUV off at the shop, and wait for the claim process to play out.

The collision took place at the 10-month mark of the loan. The CX-3 has traveled 27,519 miles under our watch and has accomplished 28.0 mpg over that period. In total, it has cost \$252.49 for three maintenance stops at the fixed 7,500-mile interval timetable—7,500, 15,000, and 22,500 miles.

It's been an interesting journey with the CX-3. Lately, it's been reminding me of a sports car. Not with its performance, of course, but I do adore driving it like a sports car much more than commuting with it. Which, in my head, is the exact reaction that Mazda wants to elicit.



2016 Subaru Outback Chris Clonts



"Love the way the Outback glides over the deep gutters at LA intersections. Sports cars must crawl over them at an angle." @CCLonts

Our 2016 Subaru Outback has blown past 20,000 miles thanks to my urban adventures and its regular use as a photo support vehicle for our staff.

What makes it such an attractive vehicle for photo folks? Well, it schleps a lot in its 73.3-cubic-foot cargo hold with the seats down, it's great for what we call car-to-car photography. The load floor with the seats down is lower—29 inches off the ground—than those in many SUVs, so it's perfect for those nearly ground-level shots of moving cars' front ends. And that's despite having a ground

Service life / 11 mo/20,093 mi
Avg CO₂ / 0.72 lb/mi
Energy cons / 126 kW-hrs/100 mi
Unresolved problems / None
Maintenance cost / \$0 (2-oil change, inspection)
Normal-wear cost / \$0
Base price / \$31,545 **As tested** / \$34,989

REAL MPG FUEL ECON 26.8 MPG comb.

clearance of 8.7 inches. Of course if an ultra-low load floor is your top priority, you're better off with a minivan such as the Honda Odyssey (24.5 inches).

I've praised the EyeSight system before. But it and some other semi-autonomous systems also go through something that ranges from annoying to dangerous in the following scenario.

Say you're traveling behind a vehicle at highway speed with the auto-distance cruise control on. The

The Subaru Outback's rear seats are roomy and comfortable, even on long trips. Folded, the seats create a generous amount of cargo space—73.3 cubic feet.

car ahead of you brakes. EyeSight begins to slow to match the speed of the car ahead. You see the lane to your left is open, so you jump into it.

And here's a difference between a human driver and a computer. The human driver would, most likely, jump on the gas to reaccelerate to the speed of traffic. The computer, however, takes an eternity (at least in traffic) to realize your lane is clear and decide to speed up again. If there is any approaching traffic closing from behind, the computer does not know it, which can present some tense moments.

I know that many will say, "That's not what the system was meant for." It's certainly what our testing director, Kim Reynolds, said.

Maybe this is something that will be on the agenda for the next push forward in autonomous systems. But for now, it's occasionally harrowing, even as a result of driver overconfidence or error.



2016 Nissan Maxima SR Jason Udy



The @NissanUSA Maxima made a comfortable commuter and freeway cruiser with a small dose of sport thrown in. @MT_JasonUdy

Nissan has returned to its 4DSC, or “four-door sports car,” marketing campaign for the eighth generation of its flagship sedan. After 13 months and nearly 30,000 miles on our 2016 Nissan Maxima SR long-term tester, we have some thoughts as to whether that definition is accurate.

All Maxima sedans are powered by a naturally aspirated 3.5-liter DOHC VQ V-6 rated 300 hp and 261 lb-ft of torque. Full power is sent to the front wheels via a CVT with manual shift mode, D-Step logic, and sport tuning. In 2016, the Maxima was available in five trim levels: the base S, SV, SL, SR, and Platinum. The Platinum trim is the most luxurious model, and the SR is sport-focused.

Service life / 13 mo / 29,896 mi
Base price / \$38,495 **Options** / Sport floor mats, trunk mat, trunk net (\$255)
Price as tested / \$38,750
Avg fuel econ/CO2 / 23.5 mpg / 0.83 lb/mi
Problem areas / None **Maintenance cost** / \$738.85 (5-oil change, inspection; 4-tire rotation; 1-cabin air filter, brake fluid change)
Normal-wear cost / \$0
3-year residual value* / \$18,450 / \$21,400
Recalls / ABS actuator, passenger airbag sensor, fuel tank

REAL MPG CITY/HWY/COMB FUEL ECON
24.2/30.4/26.6 MPG

*IntelliChoice trade-in/retail (at 42,000 miles)



Unique features of our SR trim include a sport-tuned suspension with Yamaha performance dampers, Integrated Dynamics control module with active ride control, active trace control, and active engine brake.

The SR trim also rides on 19-inch alloy wheels. (Other models feature 18-inch alloy wheels.) Leather seats are standard on all but the S trim, but the SR features Alcantara inserts with a diamond-quilted pattern. The SR also forgoes the moonroof (SL, Platinum) to reduce overall weight and provide a lower center of gravity.

In testing, our long-term Maxima SR hit 60 mph in 6.0 seconds and finished the quarter mile in 14.7 seconds at 99.3 mph. It also lapped the figure eight in 26.6 seconds at 0.69 g average. We've tested four other 2016 Nissan Maxima sedans, including two SRs and two Platinum models. Those cars hit 60 mph in 5.7–5.8 seconds and finished the quarter mile in 14.2–14.3 seconds. Figure-eight lap times varied between 26.0 and 27.0 seconds. Not a significant variation among the same model.



Despite its sedan roots, the Nissan Maxima features sporty good looks from almost all angles.



How does the Maxima SR fare against other front-drive V-6 midsize sedans? A 2017 Honda Accord V6 Touring with a 278-hp, 252 lb-ft 3.5-liter V-6 accelerated to 60 in 5.7 seconds and hit the quarter mile in 14.2 seconds at 98.6 mph, and it lapped the figure eight in 26.6 seconds.

Also, a lot of folks walk into Nissan dealerships unsure if they want a Maxima or the midsize Altima. By comparison, the Altima with the optional 270-hp, 251 lb-ft version of Nissan's 3.5-liter V-6 puts down similar numbers. A 2013 Nissan Altima 3.5 SL we tested took 5.9 seconds to get to 60 and 14.2 seconds at 101.7 mph in the quarter mile and lapped the figure eight in 27.1 seconds at 0.66 g. A 2016 refresh gives the Altima a more aggressive Maxima-like mug.

Our 2016 Nissan Maxima SR had a base price of \$38,495. In comparison, a 2017 Nissan Altima 3.5 SR (the least expensive Altima with the V-6) starts at \$28,825, and a loaded Altima 3.5 SL starts at \$33,525. Pricing for a 2017 Honda Accord EX-L V-6 starts at \$31,730, and a loaded Accord Touring is priced at \$35,665. A base 2017 Nissan Maxima S (with cloth seats) starts at \$33,425, and the Maxima Platinum is priced at \$40,855.

Although other cars offer similar performance for less money, the Maxima sedan's interior was an especially comfortable spot to spend time. During its tenure, it made seven round trips to the Rocky Mountains at a minimum of 1,500 miles each.

After 13 months in the Motor Trend Garage, we sent the 2016 Nissan Maxima SR off with a total of 29,896 miles on the odometer. The Maxima is EPA-rated 22/30/25 mpg city/highway/combined. We averaged 23.5 mpg combined over nearly 30,000 miles. Not bad considering it spent about 200 miles per week stuck in Los Angeles slow-and-go traffic.

With a service interval of every 5,000 miles, our Maxima was just shy of its sixth oil change. Total maintenance costs came to \$738.85 and included five oil changes, four tire rotations, the 15,000-mile service (new engine and cabin air filters and a brake fluid change), and two key fob battery replacements. In comparison, we spent just \$235.40 on maintenance cost on our 2015 Acura TLX 2.4 over the course of nearly 19,000 miles and just \$135.60 on maintenance for our 2013 Chrysler 300S after 25,981 miles of driving. That's more than three times the cost and less than 50 percent more miles driven than the Acura and nearly 5.5 times more cost and about 15 percent more miles driven for the Chrysler. Nissan needs to consider extending its service intervals.

Although the Maxima SR didn't require any repairs, it did have two recalls performed, the first to replace the fuel tank and the other a refash for the passenger-seat airbag sensor. Both were done during routine maintenance visits. The check-engine light came on shortly after the fuel tank was replaced. A quick visit to the dealer verified our suspicions that the issue was related to the recall and was quickly remedied by tightening down an EVAP system vent tube.

A third recall for our Maxima surfaced after it had departed. In certain cars, brake fluid could leak onto a circuit board and cause a short, which could result in a fire. The automaker will inspect the ABS actuator and replace as needed.

After nearly 30,000 miles, we decided the 2016 Nissan Maxima SR was a nice place to spend time. Although it may not compete against traditional sport sedans, it does offer a dose of sport combined with a roomy interior for everyday use or a road trip with room for two couples or a family with two teenage children. ■



2016 Nissan Maxima SR

POWERTRAIN/CHASSIS

DRIVETRAIN LAYOUT	Front-engine, FWD
ENGINE TYPE	60-deg V-6, alum block/heads
VALVETRAIN	DOHC, 4 valves/cyl
DISPLACEMENT	213.5 cu in/3,498cc
COMPRESSION RATIO	10.6:1
POWER (SAE NET)	300 hp @ 6,400 rpm
TORQUE (SAE NET)	261 lb-ft @ 4,400 rpm
REDLINE	6,500 rpm
WEIGHT TO POWER	11.8 lb/hp
TRANSMISSION	Cont. variable auto
AXLE/FINAL-DRIVE RATIO	5.25:1/2.01:1
SUSPENSION, FRONT; REAR	Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar
STEERING RATIO	15.3:1
TURNS LOCK-TO-LOCK	2.5
BRAKES, F;R	12.6-in vented disc; 12.1-in vented disc, ABS
WHEELS	8.0 x 19-in, cast aluminum
TIRES	245/40R19 94W M+S Good-year Eagle F1 Asymmetric All-Season

DIMENSIONS

WHEELBASE	109.3 in
TRACK, F/R	62.4/62.4 in
LENGTH X WIDTH X HEIGHT	192.8 x 73.2 x 56.5 in
TURNING CIRCLE	38.1 ft
CURB WEIGHT	3,544 lb
WEIGHT DIST., F/R	61/39%
SEATING CAPACITY	5
HEADROOM, F/R	39.4/36.7 in
LEGROOM, F/R	45.0/34.2 in
SHOULDER ROOM, F/R	56.7/55.7 in
CARGO VOLUME	14.3 cu ft

TEST DATA

ACCELERATION TO MPH	
0-30	2.4 sec
0-40	3.5
0-50	4.6
0-60	6.0
0-70	7.6
0-80	9.6
0-90	11.9
0-100	14.7
PASSING, 45-65 MPH	2.7
QUARTER MILE	14.5 sec @ 99.3 mph
BRAKING, 60-0 MPH	125 ft
LATERAL ACCELERATION	0.86 g (avg)
MT FIGURE EIGHT	26.6 sec @ 0.69 g (avg)
TOP-GEAR REV @ 60 MPH	1,600 rpm

CONSUMER INFO

STABILITY/TRACTION CONTROL	Yes/yes
AIRBAGS	Dual front, front side, f/r curtain
BASIC WARRANTY	3 yrs/36,000 miles
POWERTRAIN WARRANTY	5 yrs/60,000 miles
ROADSIDE ASSISTANCE	3 yrs/36,000 miles
FUEL CAPACITY	18.0 gal
EPA CITY/HWY/COMB ECON	22/30/25 mpg
ENERGY CONS., CITY/HWY	153/112 kW-hrs/100 miles
CO2 EMISSIONS, COMB	0.78 lb/mile
REAL MPG, CITY/HWY/COMB	24.2/30.4/26.6 mpg
RECOMMENDED FUEL	Unleaded premium





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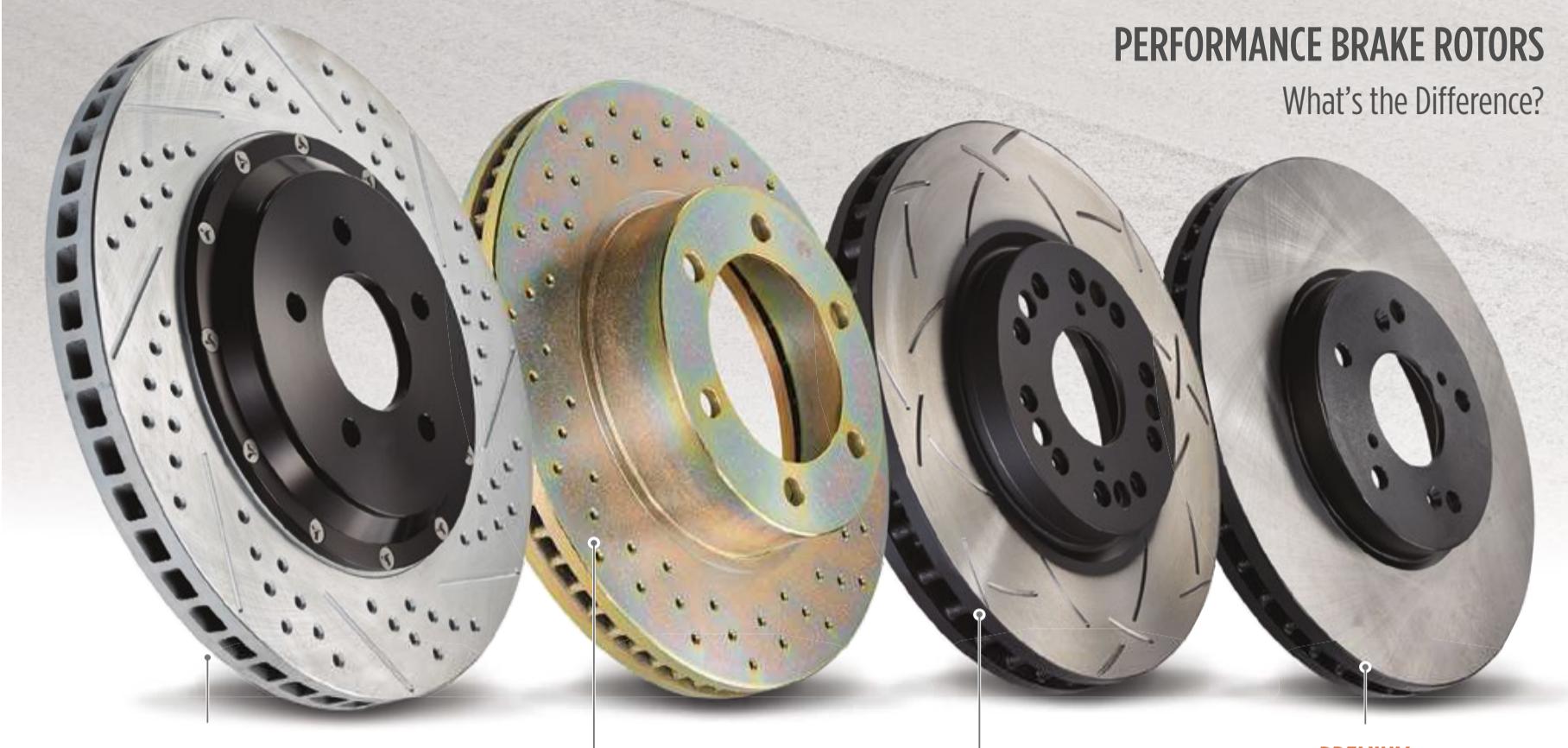
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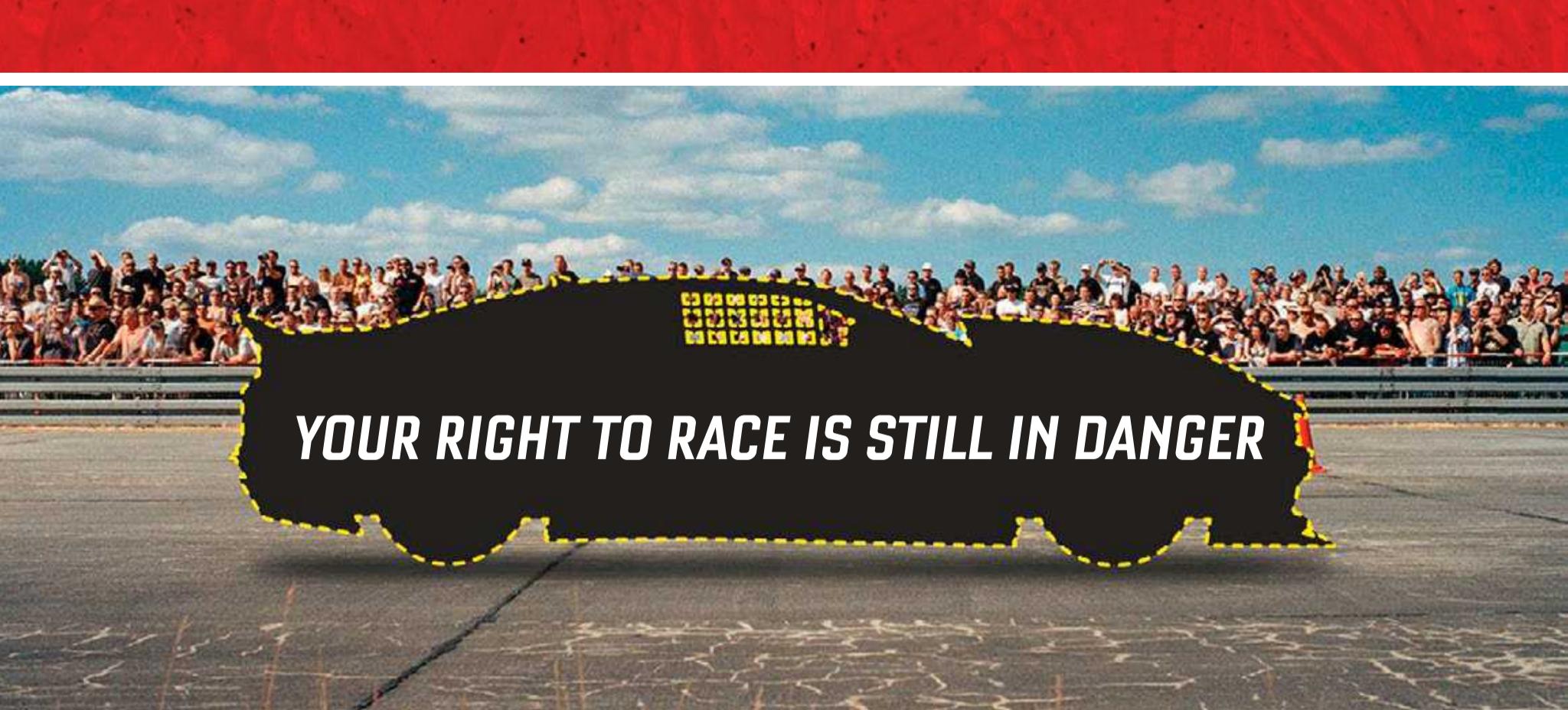
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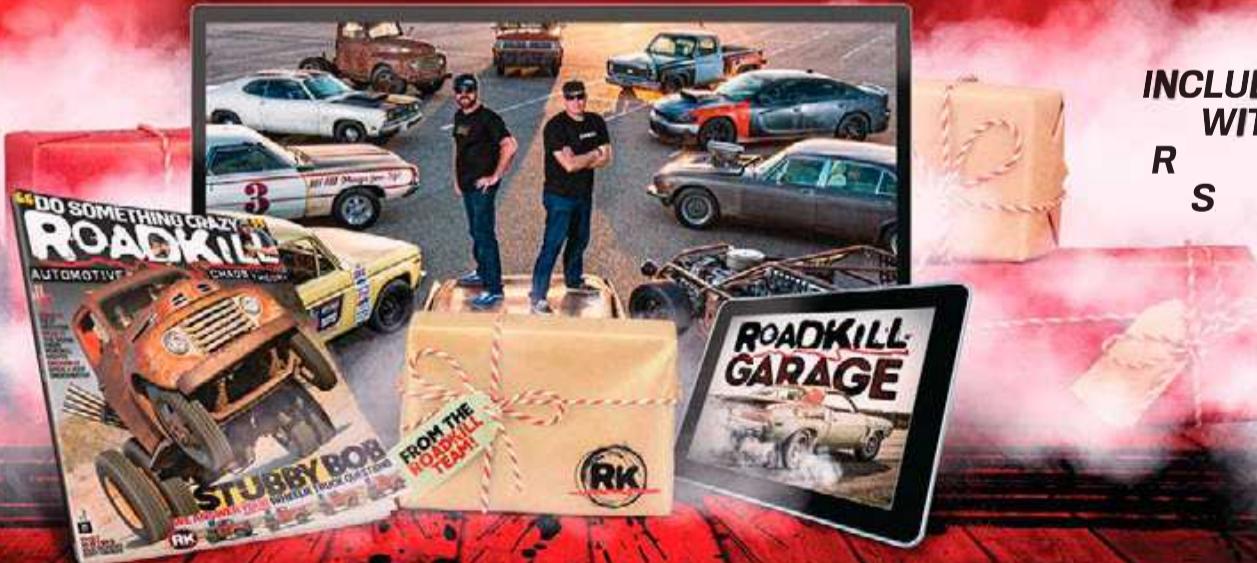
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The Big Picture



E-TENSE This DS concept has a claimed 391 hp, 155-mph top speed, and 193 miles of EV driving range.

SACRE BLEU! THE FRENCH ARE COMING. EVENTUALLY.



Carlos Tavares, chairman of French automaker PSA Group, was president of Nissan North America from 2009 to 2011. He knows how difficult and expensive it is to build and maintain a dealer network in a country with 50 different sets of franchise laws, and he knows how fickle and unforgiving American consumers can be. Yet Tavares wants PSA, maker of Peugeot, Citroën, and now the premium-wannabe DS Automobiles, to return to North America.

Ego? Hubris? Nope. Necessity. Using skills honed working alongside the hard-charging, take-no-prisoners Carlos Ghosn at Nissan, Tavares has briskly knocked PSA Group into shape—claiming it now has no debt and that it was the fourth most profitable automaker in the world for the first half of 2016. But he knows PSA cannot be a global auto industry player unless it plays in the world's second-largest auto market.

Peugeots and Citroëns were once sold in the U.S., but a tragic combination of arrogance and insularity doomed both brands to failure. Citroën quit the U.S. market after its spectacularly radical SM coupe failed to win an exemption from the 1974 model year 5-mph bumper law (the car's variable ride height made compliance difficult), and Peugeot closed shop here in 1991 after pragmatic American consumers ignored the front-drive 405 sedan in favor of lower-priced and higher-quality Japanese imports.

That history—and the patchy American track record of other mass-market European brands such as Renault, Fiat, and Alfa Romeo—perhaps explains why Tavares suggests the first step

in PSA's return doesn't involve actually selling any Peugeot, Citroën, or DS vehicles in the U.S. Instead, PSA will be a mobility service provider, running fleets of vehicles from other automakers. Once that business is firmly established, the fleets will be populated with PSA products. Detailed practical feedback on American consumers' needs and wants will then be gathered and incorporated into a new generation of cars, trucks, and SUVs. Only then will PSA offer vehicles for sale in America.

No decision has been made on which of PSA's three brands will come to the U.S., but as the premium segment is where the money is these days, it seems logical DS Automobiles will be the spearhead. Originally launched in 2010 as a high-style Citroën sub-brand, DS was spun off by Tavares as a stand-alone premium brand in April 2014. The idea is DS has the same relationship with the Peugeot and Citroën bands as Audi does with Volkswagen and Škoda, sharing mechanics and platform hardware with its plebian siblings but with its own flamboyant design language and high levels of luxury equipment—as shown by concepts such as the Divine DS hatchback, the DS E-Tense sports car,



WILD RUBIS Will Americans buy into DS' style?

and the Wild Rubis SUV. PSA plans to launch six new DS models by 2020, including two SUVs.

"DS' mission is to represent the sophistication of French luxury in cars," Tavares says. But few Americans are likely to care about DS' shameless attempt to co-opt the hipster appeal of the 1955 Citroën DS sedan, the most technically advanced mainstream production car in history. PSA Group needs only examine the story behind the Alfa Romeo Giulia—all red and racy Italian passion, the sedan *con brio*. Although it may be far more convincing, FCA is discovering the Alfa heritage doesn't count for much in America.

Ironically, it might be less important that DS is perceived as French (or not) than whether the user feedback gathered from American consumers genuinely enables PSA to develop DS products able to muscle in on premium brands such as Audi, Volvo, Jaguar, Cadillac, and Infiniti. Tavares, who points out that it took Infiniti 20 years to overtake Audi in the U.S., believes patience is its own reward. "It will be a 10-year project," he insists. "The goal is not to announce that we go back to the North American market. The goal is to come back and stay." ■



CARLOS TAVARES
He turned around Peugeot and Citroën and now eyes the U.S.



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